

This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Minor, Municipal permit. The discharge results from the operation of a 0.02 MGD wastewater treatment plant. This permit action consists of updating the proposed effluent limits to reflect the current Virginia WQS at 9VAC25-260-00 et seq (effective February 1, 2010) and updating permit language, as appropriate, to reflect current boilerplate. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9VAC25-260-00 et seq.

1. Facility Name and Mailing Address: Rapidan Baptist Camp WWTP
P.O. Box 10
Rochelle, VA 22738

SIC Code : 4952 WWTP

Facility Location: Route 621, 2 miles west of Rochelle
County: Madison

Facility Contact Name: Wayne Leighan
Telephone Number: (540) 672-0426
2. Permit No.: VA0060879
Expiration Date of previous permit: June 12, 2011
Other VPDES Permits associated with this facility: None
Other Permits associated with this facility: None
E2/E3/E4 Status: Not Applicable
3. Owner Name: Rapidan Baptist Camp
Owner Contact/Title: Kelly Earles, Director
Telephone Number: (540) 672-0426
4. Application Complete Date: December 20, 2010
Permit Drafted By: Alison Thompson
Date Drafted: 1/24/2011
Draft Permit Reviewed By: Joan Crowther
Date Reviewed: 2/4/2011
WPM Review: Bryant Thomas
Date Reviewed: Not reviewed
Public Comment Period : Start Date: 4/7/2011
End Date: 5/9/2011
5. Receiving Waters Information: See Attachment 1 for the Flow Frequency Determination
Receiving Stream Name : Rapidan River, UT
Drainage Area at Outfall: 4.02 sq.mi.
River Mile: 3-XBO0.39
Stream Basin: Rappahannock
Subbasin: Not Applicable
Section: 04
Stream Class: III
Special Standards: None
Waterbody ID: VAN-E13R/RA27
7Q10 Low Flow: 0.09 MGD
30Q10 High Flow: 0.66 MGD
1Q10 Low Flow: 0.07 MGD
1Q10 High Flow: 0.39 MGD
Harmonic Mean Flow: 1.00 MGD
30Q5 Flow: 0.23 MGD
303(d) Listed: Yes
30Q10 Flow: 0.16 MGD
TMDL Approved: Yes (downstream)
Date TMDL Approved: 12/5/2007
6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

| | |
|---|---|
| <input checked="" type="checkbox"/> State Water Control Law | <input checked="" type="checkbox"/> EPA Guidelines |
| <input checked="" type="checkbox"/> Clean Water Act | <input checked="" type="checkbox"/> Water Quality Standards |
| <input checked="" type="checkbox"/> VPDES Permit Regulation | <input type="checkbox"/> Other |
| <input checked="" type="checkbox"/> EPA NPDES Regulation | |
7. Licensed Operator Requirements: Class IV

8. Reliability Class: Class II

9. Permit Characterization:

| | | |
|---|---|---|
| <input checked="" type="checkbox"/> Private | <input type="checkbox"/> Effluent Limited | <input type="checkbox"/> Possible Interstate Effect |
| <input type="checkbox"/> Federal | <input checked="" type="checkbox"/> Water Quality Limited | <input type="checkbox"/> Compliance Schedule Required |
| <input type="checkbox"/> State | <input type="checkbox"/> Toxics Monitoring Program Required | <input type="checkbox"/> Interim Limits in Permit |
| <input type="checkbox"/> POTW | <input type="checkbox"/> Pretreatment Program Required | <input type="checkbox"/> Interim Limits in Other Document |
| <input checked="" type="checkbox"/> TMDL | | |

10. Wastewater Sources and Treatment Description:

Raw sewage is collected from five points at the campground and is gravity fed to the extended aeration package plant. The sources of wastewater are the summer campground, conference center and director's residence. Wastewater passes through a manual bar screen prior to the aeration chamber. From the aeration unit, flow enters a clarifier. The RAS is pumped back to the extended aeration while the WAS is pumped to a holding tank. Flow then enters a 70,000 gallon polishing pond for further treatment. The overflow from the pond flows to the chlorination unit which consists of tablet feeders and a chlorine contact tank to ensure adequate disinfection. Effluent passes over a V-notch weir into the post aeration tank consisting of three air diffusers. After post aeration, the effluent is dechlorinated via a tablet feeder prior to discharge.

See Attachment 2 for a facility schematic/diagram.

TABLE 1 – Outfall Description

| Outfall Number | Discharge Sources | Treatment | Design Flow | Outfall Latitude and Longitude |
|---|-------------------|--------------------|-------------|--------------------------------|
| 001 | Domestic | See Item 10 above. | 0.02 MGD | 38° 16' 53" N 77° 18' 00" W |
| See Attachment 3 for (Rochelle Quad) topographic map. | | | | |

11. Sludge Treatment and Disposal Methods:

There is no sludge treatment at this facility; storage only. Sludge is pumped and hauled to the Town of Orange Wastewater Treatment Facility (VA0021385) for final treatment and disposal.

12. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge:

TABLE 2

| VPDES No. | Description |
|-----------|--|
| NA | Town of Orange – water intake for potable water intake. Located approximately 14.8 miles downstream. |
| VA0053121 | Outfall 001 for the Town of Orange Water Treatment Plant – Poplar Run. Located approximately 15.3 miles downstream. |
| VA0021385 | Town of Orange WWTP – Rapidan River. Located approximately 15.0 miles downstream. |
| VA0027839 | Woodberry Forest School – Outfall 001 (WWTP effluent) & Outfall 002 (WTP effluent) – Rapidan River. Located approximately 20.3 miles downstream. |

Material Storage:

| TABLE 3 - Material Storage | | |
|----------------------------|----------------------|--------------------------------------|
| Materials Description | Volume Stored | Spill/Stormwater Prevention Measures |
| Chlorine tablets | (2) 5-gallon buckets | Under roof |
| Dechlorination tablets | (2) 5-gallon buckets | Under roof |
| Soda Ash | (2) 50# bags | Under roof |
| Polymer | (4) 1-gallon buckets | Under roof |

14. Site Inspection:

Performed by DEQ Compliance staff on September 28, 2005 (Attachment 4).

15. Receiving Stream Water Quality and Water Quality Standards:a) Ambient Water Quality Data

Station 3-XBO000.26 is located in the receiving stream segment. There is only a limited amount of data collected for this station, with no new samples collected since 2003. Station 3-XBO000.26 is located approximately 0.14 miles downstream from Outfall 001 at the Rt. 621 bridge crossing. This station is located in segment VAN-E13R_XBO04A04, which begins at the headwaters of the unnamed tributary and continues downstream until the confluence with the Rapidan River. The following is the assessment summary for this segment, as taken from the Draft 2010 Integrated Assessment: *Although the fecal coliform bacteria criteria are no longer being used for assessment purposes, there has been no or insufficient E. coli bacteria monitoring along this assessment unit reach. The fecal coliform impairment formerly associated with this assessment unit will remain. The recreation use is considered not supported, as described above. This impairment is nested within the downstream completed bacteria TMDL for the Rapidan River. The aquatic life and wildlife uses are considered fully supporting. The fish consumption use was not assessed.*

The nearest active downstream DEQ monitoring station is station 3-RAP055.84 located approximately 7.4 miles downstream from Outfall 001 where Rt. 231 crosses the Rapidan River. This station is located in assessment segment VAN-E13R_RAP02A06, which begins at the confluence with Marsh Run and continues downstream until the confluence with Blue Run. The following is the assessment summary for this segment of the Rapidan River, as taken from the Draft 2010 Integrated Report: *DEQ freshwater probabilistic monitoring station 3-RAP053.02, downstream from Route 231, and ambient monitoring station 3-RAP055.84, at Route 231. Bacteria monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. This impairment is nested within the downstream completed bacteria TMDL for the Rapidan River. The aquatic life and wildlife uses are considered fully supporting, based on biological and associated chemical monitoring. The fish consumption use is considered fully supporting based on water column metals data.*

The full planning statement can be found in the reissuance file.

b) Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream, an unnamed tributary to the Rapidan River, is located within Section 04 of the Rappahannock River Basin, and classified as a Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

Attachment 5 details other water quality criteria applicable to the receiving stream.

Ammonia:

The fresh water, aquatic life Water Quality Criteria for Ammonia are dependent on the in-stream temperature and pH. The 90th percentile temperature and pH values are used because they best represent the critical design conditions of the receiving stream. Staff has re-evaluated the receiving stream ambient monitoring data for pH and temperature (Attachment 5) and finds no significant differences from the data used to establish ammonia criteria and subsequent effluent limits in the previous permit. Therefore, the previously established pH (7.7 s.u.) and temperature (26.1 C) stream values will be carried forward as part of this reissuance process. Staff has also reviewed the pH and temperature data from the effluent for the past three years; the data has been placed in the reissuance file. The 90th percentile of the discharge pH is 8.26 s.u. and shall be used in the development of the criteria presented in Attachment 5. A default temperature value of 20 C was used for the effluent.

Metals Criteria:

The Water Quality Criteria for some metals are dependent on the receiving stream's hardness (expressed as mg/l calcium carbonate). There is no hardness data for this facility. Staff guidance suggests using a default hardness value of 50 mg/L CaCO₃ for streams east of the Blue Ridge. The hardness-dependent metals criteria in Attachment 5 are based on this value.

Bacteria Criteria: The Virginia Water Quality Standards (9VAC25-260-170 A.) states that the following criteria shall apply to protect primary recreational uses in surface waters:

- 1) *E. coli* bacteria per 100 ml of water shall not exceed a monthly geometric mean of the following:

| | Geometric Mean ¹ |
|--------------------------------------|-----------------------------|
| Freshwater <i>E. coli</i> (N/100 ml) | 126 |

¹For a minimum of four weekly samples [taken during any calendar month].

- c) Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Rapidan River, UT, is located within Section 04 of the Rappahannock River Basin. This section has not been designated with a special standard.

- d) Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched on January 4, 2011 for records to determine if there are threatened or endangered species in the vicinity of the discharge. No threatened or endangered species were confirmed. The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and therefore, protect the threatened and endangered species found near the discharge. The search has been placed in the reissuance file.

16. Antidegradation (9VAC25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1 based on an evaluation of the dissolved oxygen model used to set the effluent limitations. The model was run to meet the Water Quality Criteria for dissolved oxygen. Permit limits

proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are the calculated on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a) Effluent Screening:

Effluent data obtained from DMRs has been reviewed and determined to be suitable for evaluation. There have been no exceedances of the established limitations. The following pollutants require a wasteload allocation analysis: Ammonia as N and Total Residual Chlorine.

b) Mixing Zones and Wasteload Allocations (WLAs):

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o [Q_e + (f)(Q_s)] - [(C_s)(f)(Q_s)]}{Q_e}$$

Where:

| | | |
|----------------|---|---|
| WLA | = | Wasteload allocation |
| C _o | = | In-stream water quality criteria |
| Q _e | = | Design flow |
| f | = | Decimal fraction of critical flow from mixing evaluation |
| Q _s | = | Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; 30Q10 for chronic ammonia criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria) |
| C _s | = | Mean background concentration of parameter in the receiving stream. |

The Water Quality Standards contain two distinct mixing zone requirements. The first requirement is general in nature and requires the "use of mixing zone concepts in evaluating permit limits for acute and chronic standards in 9VAC25-260-140.B". The second requirement is specific and establishes special restrictions for regulatory mixing zones "established by the Board".

The Department of Environmental Quality uses a simplified mixing model to estimate the amount of mixing of a discharge with the receiving stream within specified acute and chronic exposure periods. The simplified model contains the following assumptions and approximations:

- The effluent enters the stream from the bank, either via a pipe, channel or ditch.
- The effluent velocity isn't significantly greater (no more than 1 - 2 ft/sec greater) than the stream velocity.
- The receiving stream is much wider than its depth (width at least ten times the depth).
- Diffusive mixing in the longitudinal direction (lengthwise) is insignificant compared with advective transport (flow).

- Complete vertical mixing occurs instantaneously at the discharge point. This is assumed since the stream depth is much smaller than the stream width.
- Lateral mixing (across the width) is a linear function of distance downstream.
- The effluent is neutrally buoyant (e.g. the effluent discharge temperature and salinity are not significantly different from the stream's ambient temperature and salinity).
- Complete mix is determined as the point downstream where the variation in concentration is 20% or less across the width and depth of the stream.
- The velocity of passing and drifting organisms is assumed equal to the stream velocity.

If it is suitably demonstrated that a reasonable potential for lethality or chronic impacts within the physical mixing area doesn't exist, then the basic complete mix equation, with 100% of the applicable stream flow, is appropriate. If the mixing analysis determines there is a potential for lethality or chronic impacts within the physical mixing area, then the proportion of stream flow that has mixed with the effluent over the allowed exposure time is used in the basic complete mix equation. As such, the wasteload allocation equation is modified to account for the decimal fraction of critical flow (f).

Staff derived wasteload allocations where parameters are reasonably expected to be present in an effluent (e.g., total residual chlorine where chlorine is used as a means of disinfection) and where effluent data indicate the pollutant is present in the discharge above quantifiable levels. With regard to the Outfall 001 discharge, ammonia as N is likely present since this is a WWTP treating sewage, and total residual chlorine may be present since chlorine is used for disinfection are present in the discharge. As such, Attachment 5 details the mixing analysis results and WLA derivations for these pollutants.

c) Effluent Limitations Toxic Pollutants, Outfall 001 –

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N:

Staff reevaluated the effluent pH and has concluded it is significantly different than what was used previously to derive ammonia criteria. As result, staff used the new data to determine new ammonia water quality criteria, new wasteload allocations (WLAs) and new ammonia limits (Attachment 6). DEQ guidance suggests using a sole data point of 9.0 mg/L for discharges containing domestic sewage to ensure the evaluation adequately addresses the potential for ammonia to be present in the discharge containing domestic sewage.

The new evaluation shows that no limit is necessary for ammonia. Due to antibacksliding considerations and since the facility is meeting the current limitations; staff proposes that the existing limitations be carried forward with the reissued permit (Attachment 6).

2) Total Residual Chlorine:

Chlorine is used for disinfection and is potentially in the discharge. Staff calculated WLAs for TRC using current critical flows and the mixing allowance. In accordance with current DEQ guidance, staff used a default data point of 0.2 mg/L and the calculated WLAs to derive limits. The new limit evaluation shows that the limits could be relaxed, but since the facility has been meeting the existing limitations and because of antibacksliding considerations, the existing limitations are proposed to be carried forward with this reissuance. A monthly average of 0.025 mg/L and a weekly average limit of 0.030 mg/L are proposed for this discharge (Attachment 6).

d) Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes to dissolved oxygen (D.O.), biochemical oxygen demand-5 day (BOD₅), total suspended solids (TSS), Ammonia as N (June-November), Total Residual Chlorine, and pH limitations are proposed.

Dissolved Oxygen and BOD₅ limitations are based on the stream modeling conducted in November 1973 (Attachment 7) and are set to meet the water quality criteria for D.O. in the receiving stream.

It is staff's practice to equate the Total Suspended Solids limits with the BOD₅ limits. TSS limits are established to equal BOD₅ limits since the two pollutants are closely related in terms of treatment of domestic sewage.

pH limitations are set at the water quality criteria.

E. coli limitations are in accordance with the Water Quality Standards 9VAC25-260-170. This facility has an allocation in the approved Bacteria TMDL for the Rapidan River. This discharge is intermittent in nature and typically occurs from June to August each year. A review of the operator's daily logs (copies are in the reissuance file) shows that July is the month with the most frequent discharges. It is staff's best professional judgment that *E. coli* monitoring be conducted 1/week during July of each year to demonstrate compliance with the Water Quality Standards and the wasteload allocation in the approved TMDL.

e) Effluent Limitations and Monitoring Summary.

The effluent limitations are presented in the following table. Limits were established for Flow, BOD₅, Total Suspended Solids, Ammonia as N, pH, Dissolved Oxygen, Total Residual Chlorine, and *E. coli*.

The limit for Total Suspended Solids is based on Best Professional Judgement.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/l), with the flow values (in MGD) and a conversion factor of 3.785.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for BOD and TSS (or 65% for equivalent to secondary). The limits in this permit are water-quality-based effluent limits and result in greater than 85% removal.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

19.a. Effluent Limitations/Monitoring Requirements:

Design flow is 0.02 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

| PARAMETER | BASIS FOR LIMITS | DISCHARGE LIMITATIONS | | | | MONITORING REQUIREMENTS | | | |
|--|------------------|------------------------|------------|-----------------------|------------|-------------------------|----------------|---------------------|--------------------|
| | | <u>Monthly Average</u> | | <u>Weekly Average</u> | | <u>Minimum</u> | <u>Maximum</u> | <u>Frequency</u> | <u>Sample Type</u> |
| Flow (MGD) | NA | NL | | NA | | NA | NL | 1/D | Est |
| pH | 3 | NA | | NA | | 6.0 S.U. | 9.0 S.U. | 1/D | Grab |
| BOD ₅ | 3,5 | 24 mg/L | 1.8 kg/day | 36 mg/L | 2.7 kg/day | NA | NA | 1/M | Grab |
| Total Suspended Solids (TSS) | 2 | 24 mg/L | 1.8 kg/day | 36 mg/L | 2.7 kg/day | NA | NA | 1/M | Grab |
| Dissolved Oxygen | 3 | NA | | NA | | 6.0 mg/L | NA | 1/D | Grab |
| Ammonia, as N (Jun-Nov) | 3,5 | 7.3 mg/L | | 7.3 mg/L | | NA | NA | 1/M | Grab |
| <i>E. coli</i> (Geometric Mean) ^{(a) (b)} | 3,6 | 126 n/100mls | | NA | | NA | NA | 1/YR ^(b) | Grab |
| Total Residual Chlorine (after contact tank) | 2, 3, 4 | NA | | NA | | 1.0 mg/L | NA | 1/D | Grab |
| Total Residual Chlorine (after dechlorination) | 3 | 0.025 mg/L | | 0.030 mg/L | | NA | NA | 1/D | Grab |

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards
4. DEQ Disinfection Guidance
5. Stream Model- Attachment 7
6. TMDL Wasteload Allocation

MGD = Million gallons per day.*NA* = Not applicable.*NL* = No limit; monitor and report.*S.U.* = Standard units.*1/D* = Once every day.*1/M* = Once every month.*1/YR* = The facility shall collect weekly samples (4/month) during July each year.

Est = An estimate of the flow based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

^(a) Samples shall be collected between the hours of 10 A.M. and 4 P.M.^(b) The permittee shall sample and submit *E. coli* results at the frequency of once every week during July each year. A total of 4 weekly samples shall be used to calculate the geometric mean.

19b. Groundwater Monitoring Requirements:

Effective Dates: During the period beginning with the effective date of the permit and lasting until the permit expiration date.

For wells: MW1, MW2 and MW3

| PARAMETERS | UNITS | LIMIT | Monitoring Requirements | |
|------------------------|----------|-------|-------------------------|-------------|
| | | | FREQUENCY | SAMPLE TYPE |
| Static water level | Ft. | NL | 1/YR | Measured |
| pH | S.U. | NL | 1/YR | Grab |
| Conductivity | µmho/cm | NL | 1/YR | Grab |
| Chlorides | mg/L | NL | 1/YR | Grab |
| <i>E. coli</i> | n/100 mL | NL | 1/YR | Grab |
| Nitrates | mg/L | NL | 1/YR | Grab |
| Ammonia as N | mg/L | NL | 1/YR | Grab |
| Total Dissolved Solids | mg/L | NL | 1/YR | Grab |
| Total Organic Carbon | mg/L | NL | 1/YR | Grab |

1. Annual sampling shall be conducted once each calendar year. Sampling shall be conducted during the summer when the WWTP is operational. Analytical results shall be received by DEQ-NRO by January 10th of the following year.
2. Sampling frequency may be increased to monthly if significant contamination is found.
3. The static water level shall be measured prior to bailing the well water for sampling. At least three volumes of groundwater shall be withdrawn immediately before sampling each well.

1/YR = Once per calendar year.

Grab = An individual sample collected over a period not to exceed 15-minutes.

20. Other Permit Requirements:

- a) Part I.B. of the permit contains additional chlorine monitoring requirements, quantification levels and compliance reporting instructions.

These additional chlorine requirements are necessary per the Sewage Collection and Treatment Regulations at 9VAC25-70 and by the Water Quality Standards at 9VAC25-260-170. A minimum chlorine residual must be maintained at the exit of the chlorine contact tank to assure adequate disinfection. No more than 10% of the monthly test results for TRC at the exit of the chlorine contact tank shall be <1.0 mg/L with any TRC <0.6 mg/L considered a system failure. Monitoring at numerous STPs has concluded that a TRC residual of 1.0 mg/L is an adequate indicator of compliance with the *E. coli* criteria. *E. coli* limits are defined in this section as well as monitoring requirements to take effect should an alternate means of disinfection be used.

9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

21. Other Special Conditions:

- a) 95% Capacity Reopener. The VPDES Permit Regulation at 9VAC25-31-200.B.4. requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. The facility is a PVOTW.
- b) Indirect Dischargers. Required by VPDES Permit Regulation, 9VAC25-31-200 B.1. and B.2. for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.
- c) O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. Within 90 days of the effective date of this permit, the permittee shall submit for approval an Operations and Maintenance (O&M) Manual or

a statement confirming the accuracy and completeness of the current O&M Manual to the Department of Environmental Quality, Northern Regional Office (DEQ-NRO). Future changes to the facility must be addressed by the submittal of a revised O&M Manual within 90 days of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

- d) CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.
- e) Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9VAC25-31-200 C, and Rules and Regulations for Waterworks and Wastewater Works Operators (18VAC160-20-10 et seq.) requires licensure of operators. This facility requires a Class IV operator.
- f) Reliability Class. The Sewage Collection and Treatment Regulations at 9VAC25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. The facility is required to meet a reliability Class of II.
- g) Water Quality Criteria Reopener. The VPDES Permit Regulation at 9VAC25-31-220 D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should effluent monitoring indicate the need for any water quality-based limitations, this permit may be modified or alternatively revoked and reissued to incorporate appropriate limitations.
- h) Treatment Works Closure Plan. The State Water Control Law §62.1-44.15:1.1, makes it illegal for an owner to cease operation and fail to implement a closure plan when failure to implement the plan would result in harm to human health or the environment. This condition is used to notify the owner of the need for a closure plan where a facility is being replaced or is expected to close.
- i) Sludge Reopener. The VPDES Permit Regulation at 9VAC25-31-220.C requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.
- j) Sludge Use and Disposal. The VPDES Permit Regulation at 9VAC25-31-100.P; 220.B.2., and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage.
- k) Ground Water Monitoring. State Water Control Law § 62.1-1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. Ground water monitoring for parameters of concern will indicate whether possible lagoon seepage is resulting in violations to the State Water Control Board's Ground Water Standards. The ground water monitoring plan dated 28 June 2001 was approved. The plan consisted of the installation of three monitoring wells: MW-1 (control), MW-2 and MW-3; which were monitored quarterly for the parameters listed in Part I.A. Within 90 days of the effective date of this permit, the permittee shall submit for approval an updated Groundwater Monitoring Plan or a statement confirming the accuracy and completeness of the current Plan to the Department of Environmental Quality, Northern Regional Office (DEQ-NRO). Non-compliance with the Plan shall be deemed a violation of the permit.

The quarterly data was reviewed and staff granted a reduction in the monitoring frequency from quarterly to annually in a letter dated August 7, 2009. No problems were noted in the groundwater. It is staff's best professional judgment that the annual monitoring shall continue in the reissued permit. The annual monitoring shall be conducted during the summer when the WWTP is in frequent use.

Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

- a) Special Conditions:
 - 1) The Groundwater Monitoring Special Condition was updated since the facility has installed the wells.
- b) Monitoring and Effluent Limitations:
 - 1) Groundwater monitoring was reduced from quarterly to annual.
 - 2) *E. coli* monitoring is included based on the approved TMDL for the watershed.

24. Variances/Alternate Limits or Conditions:

None

25. Public Notice Information:

First Public Notice Date: 4/7/2011

Second Public Notice Date: 4/14/2011

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3834, Alison.Thompson@deq.virginia.gov. See Attachment 8 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

26. 303 (d) Listed Stream Segments and Total Max. Daily Loads (TMDL):

The receiving stream is listed as not meeting the recreation use. The assessment has been carried over from the 2006 report, as there has not been any recent *E. coli* monitoring performed. Sufficient exceedances of the instantaneous fecal coliform bacteria criterion (5 of 7 samples - 71.4%) were recorded at DEQ's ambient water quality monitoring station (3-XBO000.26) at the Route 621 bridge to assess this stream segment as not supporting of the recreation use goal.

This impaired segment is nested within the downstream, completed bacteria TMDL for the Rapidan River. A new TMDL is not required for this impaired segment of Rapidan River because the downstream TMDL included modeling, source identification, and reductions that covered the entire watershed. The bacteria TMDL for the Rapidan River was completed and approved by EPA on 12/5/2007. This facility has a WLA of 3.48E+10 cfu/year of *E. coli*.

TMDL Reopener: This special condition is to allow the permit to reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

27. Additional Comments:

Previous Board Action(s): None.

Staff Comments: None.

Public Comment: None.

EPA Checklist: The checklist can be found in Attachment 9.

Attachments to the VA0060879 Fact Sheet

| | |
|--------------|--|
| Attachment 1 | Flow Frequency Determination |
| Attachment 2 | Facility Schematic |
| Attachment 3 | Topographic Map |
| Attachment 4 | Site Inspection |
| Attachment 5 | Water Quality Criteria and Wasteload Allocation Determinations |
| Attachment 6 | Limit Evaluations |
| Attachment 7 | Dissolved Oxygen Model |
| Attachment 8 | Public Notice |
| Attachment 9 | EPA Checklist |

January 6, 2011
MEMORANDUM

TO: VPDES Reissuance File VA0060879

FROM: Alison Thompson

SUBJECT: Flow Frequency Determination for VPDES Permit No. VA0060879
Rapidan Baptist Camp WWTP

COPIES:

This flow frequency analysis is necessary for the VPDES permit reissuance for the Rapidan Baptist Camp WWTP. The Flow Frequency determination was last done in 2000. Staff reviewed the 2000 email update and the original 1995 memorandum. Originally a regression analysis was done to determine the critical flow values using flow data from the gage at South River at Route 642 (#01665440) and the gage at Rapidan River near Ruckersville (#01665500). The gage at South River at Route 642 (#01665440) only has data from 1963 and 1981-1983; this gage station is no longer maintained and it is staff's best professional judgment that the flows are no longer appropriate to use. The other gage station used in the original regression analysis, Rapidan River near Ruckersville (#01665500), is still maintained and has up-to-date flow information. Since only one of the gage stations has current flow information, the flow frequencies at the outfall location shall be determined using values at the Rapidan River gauging station at Ruckersville, Virginia, and adjusting them by proportional drainage areas.

Rapidan River at Ruckersville, VA (#01665440)
(Gauging station data 1942 – 1995, 1999-present)

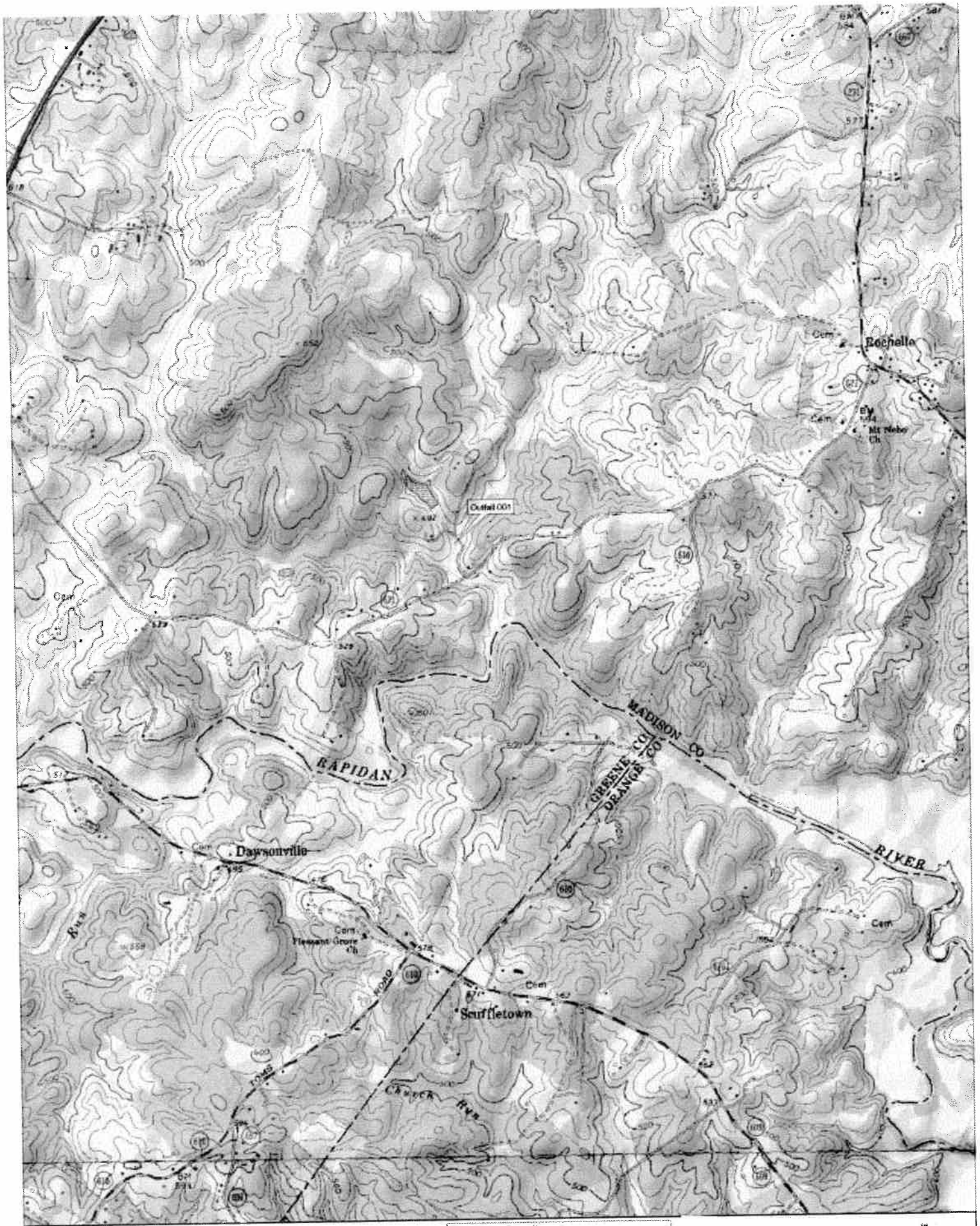
| | | |
|-----------------|---|-------------|
| Drainage area | = | 114 sq. mi. |
| 1Q10 | = | 3.1 cfs |
| 7Q10 | = | 4.0 cfs |
| 30Q5 | = | 10 cfs |
| 30Q10 | = | 7 cfs |
| High flow 30Q10 | = | 29 cfs |
| High flow 1Q10 | = | 17 cfs |
| High flow 7Q10 | = | 21 cfs |
| HM | = | 44 cfs |

UT, Rapidan River at the Rapidan Baptist Camp WWTP discharge point

| | | | |
|-----------------|---|--------------|----------|
| Drainage area | = | 4.02 sq. mi. | |
| 1Q10 | = | 0.11 cfs | 0.07 MGD |
| 7Q10 | = | 0.14 cfs | 0.09 MGD |
| 30Q5 | = | 0.35 cfs | 0.23 MGD |
| 30Q10 | = | 0.25 cfs | 0.16 MGD |
| High flow 30Q10 | = | 1.02 cfs | 0.66 MGD |
| High flow 1Q10 | = | 0.60 cfs | 0.39 MGD |
| High flow 7Q10 | = | 0.74 cfs | 0.48 MGD |
| HM | = | 1.55 cfs | 1.00 MGD |

The high flow months are December – June.





DELORE



Attachment 3



October 25, 2005

Mr. Kevin Carlock
Camp Director
Rapidan Baptist Camp & Conference Center
HCR 03, Box 385A
Rochelle, VA 22738

Re: Rapidan Baptist Camp STP – VA0060879

Dear Mr. Carlock:

Enclosed are copies of the facility technical and laboratory inspection reports generated from observations made while performing a Facility Technical Inspection at the **Rapidan Baptist Camp and Conference Center Sewage Treatment Plant** on September 28, 2005. The compliance/monitoring staff would like to thank you and Mr. Wayne Leighan for your time and assistance during the inspection.

Summaries for both the technical and laboratory inspections are enclosed. The facility had **Deficiencies** for the laboratory inspection. Please note the recommendations included in the technical and laboratory summaries.

If you have any questions or comments concerning this report, please feel free to contact me at the Northern Virginia Regional Office at (703) 583-3896 or by E-mail at eabiller@deq.virginia.gov.

Sincerely,

Beth Biller
Environmental Specialist II

cc: Permits / DMR File
Compliance Manager
Compliance Auditor
Compliance Inspector
OWPS - Bill Purcell

**DEQ
WASTEWATER FACILITY INSPECTION REPORT
PREFACE**

| | | | |
|---|---|----------------|------------------------|
| VPDES/State Certification No. | (RE) Issuance Date | Amendment Date | Expiration Date |
| VA0060879 | January 5, 2001 | | January 5, 2006 |
| Facility Name | Address | | Telephone Number |
| Rapidan Baptist Camp and Conference Center | Rt. 621 Rochelle, VA 22738 | | (540) 672-0426 |
| Owner Name | Address | | Telephone Number |
| Rapidan Baptist Camp and Conference Center | HCR 03, Box 385A, Rochelle, VA 22738 | | (540) 672-0426 |
| Responsible Official | Title | | Telephone Number |
| Kevin Carlock | Camp Director | | (540) 672-0426 |
| Responsible Operator | Operator Cert. Class/number | | Telephone Number |
| Wayne Leighan | Class IV | | (540) 672-6492 |

TYPE OF FACILITY:

| DOMESTIC | | | | INDUSTRIAL | | | |
|-------------|----------|-------|----------|------------|--|-----------|--|
| Federal | | Major | | Major | | Primary | |
| Non-federal | X | Minor | X | Minor | | Secondary | |

INFLUENT CHARACTERISTICS:

DESIGN:

| | | | |
|--|--------------------|----------------|--|
| | Flow | 0.02 | |
| | Population Served | Varies | |
| | Connections Served | 7 | |
| | BOD ₅ | Unknown | |
| | TSS | Unknown | |

EFFLUENT LIMITS: SPECIFY UNITS

| Parameter | Min. | Avg. | Max. | Parameter | Min. | Avg. | Max. |
|------------------------|------------|-------------|------------|----------------------------|------------|--------------|-------------|
| Flow (MGD) | | 0.02 | NL | TRC – Contact | 1.0 | | |
| pH | 6.0 | | 9.0 | TRC – Inst Max | | 0.025 | 0.03 |
| BOD₅ | | 24 | 36 | TRC – Inst Tech Min | 0.6 | | |
| TSS | | 24 | 36 | Ammonia as N | | 7.3 | 7.3 |
| DO | 6.0 | | | | | | |

| | | | |
|--|------------------------|---------------------|--|
| | Receiving Stream | Rocky Run | |
| | Basin | Rappahannock | |
| | Discharge Point (LAT) | 78° 18' 00" | |
| | Discharge Point (LONG) | 38° 16' 53" | |

**DEQ
WASTEWATER FACILITY
INSPECTION REPORT
PART 1**

Inspection date: **September 28, 2005** Date form completed: **October 7, 2005**
Inspection by: **Beth Biller** Inspection agency: **DEQ - NVRO**
Time spent: **20 hours** Announced: **Yes**
Reviewed by: Scheduled: **Yes**

Present at inspection: **Susan Oakes – DEQ
Kevin Carlock, Wayne Leighan – Rapidan Baptist Camp**

TYPE OF FACILITY:

Domestic**Industrial**

☐ Federal
☒ Nonfederal

☐ Major
☒ Minor

☐ Major ☐ Primary
☐ Minor ☐ Secondary

Type of inspection:

☒ Routine
☐ Compliance/Assistance/Complaint
☐ Reinspection

Date of last inspection: **May 15, 2000**
Agency: **DEQ - NVRO**

Population served: approx. **Varies**

Connections served: approx. **7**

Last month average: (Effluent) Month/year: **August 2005**
Flow: **0.001 MGD**
pH: **7.96 su**
BOD₅: **6 mg/L**

DO: **8.39 mg/L**
TRC – Contact: **0.74 mg/L**
Ammonia as N: **< QL**

Quarter average: (Effluent) **June, July, August 2005**
Flow: **0.0017 MGD**
pH: **7.56 su**
BOD₅: **5 mg/L**

DO: **7.40 mg/L**
TRC – Contact: **0.71 mg/L**
Ammonia as N: **< QL**

DATA VERIFIED IN PREFACE

☒ Updated ☐ No changes

Has there been any new construction?

☐ Yes ☒ No

If yes, were plans and specifications approved?

☐ Yes ☐ No

DEQ approval date: **NA**

(A) PLANT OPERATION AND MAINTENANCE

1. Class and number of licensed operators: **1 Class IV**
2. Hours per day plant is manned: **1-2**
3. Describe adequacy of staffing. ☐ Good ☒ Average ☐ Poor
4. Does the plant have an established program for training personnel? ☒ Yes ☐ No
5. Describe the adequacy of the training program. ☐ Good ☒ Average ☐ Poor
6. Are preventive maintenance tasks scheduled? ☒ Yes ☐ No
7. Describe the adequacy of maintenance. ☐ Good ☒ Average ☐ Poor*
8. Does the plant experience any organic/hydraulic overloading?
If yes, identify cause and impact on plant: ☐ Yes ☒ No
9. Any bypassing since last inspection? ☐ Yes ☒ No
10. Is the standby electric generator operational? ☐ Yes ☐ No* ☒ NA
11. Is the STP alarm system operational? ☐ Yes ☐ No* ☒ NA
12. How often is the standby generator exercised? **NA**
Power Transfer Switch? **NA**
Alarm System? **NA**
13. When was the cross connection control device last tested on the potable water service? **NA**
14. Is sludge being disposed in accordance with the approved sludge disposal plan? ☒ Yes ☐ No ☐ NA
15. Is septage received by the facility? ☐ Yes ☒ No
Is septage loading controlled? ☐ Yes ☐ No
Are records maintained? ☐ Yes ☐ No
16. Overall appearance of facility: ☒ Good ☐ Average ☐ Poor

Comments:

(B) PLANT RECORDS

1. Which of the following records does the plant maintain?

| | | | |
|---|---|-----------------------------|--|
| Operational Logs for each unit process | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA |
| Instrument maintenance and calibration | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA |
| Mechanical equipment maintenance | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA |
| Industrial waste contribution (Municipal Facilities) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> NA |

2. What does the operational log contain?

| | |
|---|--|
| <input checked="" type="checkbox"/> Visual observations | <input checked="" type="checkbox"/> Flow measurement |
| <input checked="" type="checkbox"/> Laboratory results | <input type="checkbox"/> Process adjustments |
| <input type="checkbox"/> Control calculations | <input type="checkbox"/> Other (specify) |

Comments:

3. What do the mechanical equipment records contain?

| | |
|--|--|
| <input checked="" type="checkbox"/> As built plans and specs | <input type="checkbox"/> Spare parts inventory |
| <input checked="" type="checkbox"/> Manufacturers instructions | <input type="checkbox"/> Equipment/parts suppliers |
| <input checked="" type="checkbox"/> Lubrication schedules | <input type="checkbox"/> Other (specify) |

Comments:

4. What do the industrial waste contribution records contain?
(Municipal Only)

| | |
|--|--|
| <input type="checkbox"/> Waste characteristics | <input type="checkbox"/> Locations and discharge types |
| <input type="checkbox"/> Impact on plant | <input type="checkbox"/> Other (specify) |

Comments: **NA**

5. Which of the following records are kept at the plant and available to personnel?

| | |
|---|---|
| <input checked="" type="checkbox"/> Equipment maintenance records | <input checked="" type="checkbox"/> Operational Log |
| <input type="checkbox"/> Industrial contributor records | <input checked="" type="checkbox"/> Instrumentation records |
| <input checked="" type="checkbox"/> Sampling and testing records | |

6. Records not normally available to plant personnel and their location: **See Note**

7. Were the records reviewed during the inspection? ☒ Yes ☐ No

8. Are the records adequate and the O & M Manual current? ☐ Yes ☒ No

9. Are the records maintained for the required 3-year time period? ☒ Yes ☐ No

Comments:

6) Records not kept at the plant are available at the Camp Director's Office.
8) The O & M Manual is in the process of being revised.

(C) SAMPLING

1. Do sampling locations appear to be capable of providing representative samples? ☒ Yes ☐ No*
2. Do sample types correspond to those required by the VPDES permit? ☒ Yes ☐ No*
3. Do sampling frequencies correspond to those required by the VPDES permit? ☒ Yes ☐ No*
4. Are composite samples collected in proportion to flow? ☐ Yes ☐ No* ☒ NA
5. Are composite samples refrigerated during collection? ☐ Yes ☐ No* ☒ NA
6. Does plant maintain required records of sampling? ☒ Yes ☐ No*
7. Does plant run operational control tests? ☒ Yes ☐ No

Comments:

(D) TESTING

1. Who performs the testing? ☒ Plant ☐ Central Lab ☒ Commercial Lab

Name: **ESS, Culpeper, VA****If plant performs any testing, complete 2-4.**

2. What method is used for chlorine analysis? **DPD – Hach Pocket Colorimeter**
3. Does plant appear to have sufficient equipment to perform required tests? ☒ Yes ☐ No*
4. Does testing equipment appear to be clean and/or operable? ☒ Yes ☐ No*

Comments:

(E) FOR INDUSTRIAL FACILITIES WITH TECHNOLOGY BASED LIMITS ONLY

1. Is the production process as described in the permit application? (If no, describe changes in comments)
☐ Yes ☐ No ☒ NA
2. Do products and production rates correspond as provided in the permit application? (If no, list differences)
☐ Yes ☐ No ☒ NA
3. Has the State been notified of the changes and their impact on plant effluent? Date:
☐ Yes ☐ No* ☒ NA

Comments:

SUMMARY

Comments:

- **Plant personnel should be commended for running a well maintained facility.**

Recommendations for action:

- **The O&M Manual is in the process of being revised; submit a copy to DEQ upon completion.**
- **The grass around the facility had recently been mowed, efforts should be made to prevent clippings/clumps from obstructing unit processes.**
- **A path to the outfall needs to be maintained for easy access.**

UNIT PROCESS: Screening/Comminution

- | | | | | | |
|----|--|--|---|---|--|
| 1. | Number of Units: | Manual: | 1 | Mechanical: | |
| | Number in operation: | Manual: | 1 | Mechanical: | |
| 2. | Bypass channel provided: | | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No* | |
| | Bypass channel in use: | | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> NA |
| 3. | Area adequately ventilated: | | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No* | |
| 4. | Alarm system for equipment failure or overloads: | | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No* | |
| 5. | Proper flow distribution between units: | | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> NA |
| 6. | How often are units checked and cleaned? | | Once per day when in use | | |
| 7. | Cycle of operation: | | Continuous | | |
| 8. | Volume of screenings removed: | | unknown | | |
| 9. | General condition: | <input checked="" type="checkbox"/> Good | <input type="checkbox"/> Fair | <input type="checkbox"/> Poor | |

Comments:

8) Screenings are disposed of at the Madison County Landfill.

UNIT PROCESS: Activated Sludge Aeration

1. Number of units: **1** In operation: **1**
2. Mode of operation: **extended aeration**
3. Proper flow distribution between units: ☐ Yes ☐ No* ☒ NA
4. Foam control operational: ☐ Yes ☐ No* ☒ NA
5. Scum control operational: ☐ Yes ☐ No* ☒ NA
6. Evidence of following problems:
- | | | |
|-----------------------------------|-------------------------------|--|
| a. dead spots | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| b. excessive foam | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| c. poor aeration | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| d. excessive aeration | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| e. excessive scum | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| f. aeration equipment malfunction | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| g. other (identify in comments) | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
7. Mixed liquor characteristics (as available):
 pH:
 MLSS:
 DO:
 SDI/SVI:
 Color:
 Odor:
 Settleability:
 Others (identify):
8. Return/waste sludge:
 A. Return Rate: **Unknown** b. Waste Rate: **Varies** c. Frequency of Wasting: **Varies**
9. Aeration system control: ☒ Time Clock ☐ Manual ☐ Continuous ☐ Other (explain)
10. Effluent control devices working properly (oxidation ditches): ☐ Yes ☐ No* ☒ NA
11. General condition: ☒ Good ☐ Fair ☐ Poor

Comments:

9) Aeration timer is set to operate for 15 minutes every hour. At 7 am and 7 pm the system aerates for 50 minutes.

UNIT PROCESS: Sedimentation[] Primary ☒ Secondary [] Tertiary

- | | | | | |
|--|---------------------|--|---|--|
| 1. Number of units: | 1 | In operation: | 1 | |
| 2. Proper flow distribution between units: | | <input type="checkbox"/> Yes | <input type="checkbox"/> No* | <input checked="" type="checkbox"/> NA |
| 3. Signs of short circuiting and/or overloads: | | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | |
| 4. Effluent weirs level: | | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No* | |
| Clean: | | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No* | |
| 5. Scum collection system working properly: | | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No* | <input type="checkbox"/> NA |
| 6. Sludge collection system working properly: | | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No* | |
| 7. Influent, effluent baffle systems working properly: | | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No* | |
| 8. Chemical addition: | | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | |
| Chemicals: | | | | |
| 9. Effluent characteristics: | No Discharge | | | |
| 10. General condition: | | <input checked="" type="checkbox"/> Good | <input type="checkbox"/> Fair | <input type="checkbox"/> Poor |

Comments:

5-6) At the time of inspection there had been little to no discharge for approximately 1 month.

UNIT PROCESS: Ponds/Lagoons

1. Type: ☐ Aerated ☒ Un aerated ☐ Polishing
2. No. of cells: **1** In operation: **1**
3. Color: ☒ Green ☐ Brown ☐ Light Brown ☐ Grey ☐ Other:
4. Odor: ☐ Septic* ☐ Earthy ☒ None ☐ Other:
5. System operated in: ☐ Series ☐ Parallel ☒ NA
6. If aerated, are lagoon contents mixed adequately? ☐ Yes ☐ No* ☒ NA
7. If aerated, is aeration system operating properly? ☐ Yes ☐ No* ☒ NA
8. Evidence of following problems:
- | | | |
|----------------------------------|--|--|
| a. vegetation in lagoon or dikes | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| b. rodents burrowing on dikes | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| c. erosion | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| d. sludge bars | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| e. excessive foam | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| f. floating material | <input checked="" type="checkbox"/> Yes* | <input type="checkbox"/> No |
9. Fencing intact: ☒ Yes ☐ No*
10. Grass maintained properly: ☒ Yes ☐ No
11. Level control valves working properly: ☒ Yes ☐ No*
12. Effluent discharge elevation: ☒ Top ☐ Middle ☐ Bottom
13. Freeboard: **3 - 5 ft.**
14. Appearance of effluent: **No Discharge** ☐ Good ☐ Fair ☐ Poor
15. General condition: ☒ Good ☐ Fair ☐ Poor
16. Are monitoring wells present? ☐ Yes ☒ No
- Are wells adequately protected from runoff? ☐ Yes ☐ No* ☒ NA
- Are caps on and secured? ☐ Yes ☐ No* ☒ NA

Comments:

8) There is a healthy layer of duckweed floating on the lagoon.**9) The entire facility is fenced.****10) The grass had been recently mowed; efforts need to be made to prevent clippings from falling in and around the system.**

UNIT PROCESS: Chlorination

- | | | | | |
|-----|---|--|-------------------------------|--|
| 1. | No. of chlorinators: | 1 | In operation: | 1 |
| 2. | No. of evaporators: | 0 | In operation: | 0 |
| 3. | No. of chlorine contact tanks: | 1 | In operation: | 0 |
| 4. | Proper flow distribution between units: | <input type="checkbox"/> Yes | <input type="checkbox"/> No* | <input checked="" type="checkbox"/> NA |
| 5. | How is chlorine introduced into the wastewater? | | | |
| | <input type="checkbox"/> Perforated diffusers | | | |
| | <input type="checkbox"/> Injector with single entry point | | | |
| | <input checked="" type="checkbox"/> Other: Tablet feeder | | | |
| 6. | Chlorine residual in basin effluent: | NA | | |
| 7. | Applied chlorine dosage: | varies | | |
| 8. | Contact basins adequately baffled: | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No* | |
| 9. | Adequate ventilation: | | | |
| | a. cylinder storage area | <input type="checkbox"/> Yes | <input type="checkbox"/> No* | <input checked="" type="checkbox"/> NA |
| | b. equipment room | <input type="checkbox"/> Yes | <input type="checkbox"/> No* | <input checked="" type="checkbox"/> NA |
| 10. | Proper safety precautions used: | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No* | |
| 11. | General condition: | <input checked="" type="checkbox"/> Good | <input type="checkbox"/> Fair | <input type="checkbox"/> Poor |

Comments:

- **At the time of inspection there had been no flow in or out of the plant. Mr. Leighan noted that the chlorination tank would be drawn down and recycled to the head of the plant before discharge restarted.**

UNIT PROCESS: Dechlorination

1. Chemical used: ☐ Sulfur Dioxide ☒ Bisulfite ☐ Other
2. No. of sulfonators: **0** In operation: **0**
3. No. of evaporators: **0** In operation: **0**
4. No. of chemical feeders: **1** In operation: **0**
5. No. of contact tanks: **0** In operation: **0**
6. Proper flow distribution between units: ☐ Yes ☐ No* ☒ NA
7. How is chemical introduced into the wastewater?
☐ Perforated diffusers
☐ Injector with single entry point
☒ Other: **Tablet feeder**
8. Control system operational: ☐ Yes ☐ No* ☒ NA
a. residual analyzers: ☐ Yes ☒ No*
b. system adjusted: ☐ Automatic ☐ Manual ☒ NA:
9. Applied dechlorination dose: **varies**
10. Chlorine residual in basin effluent: **NA**
11. Contact basins adequately baffled: ☐ Yes ☐ No* ☒ NA
12. Adequate ventilation:
a. cylinder storage area: ☐ Yes ☐ No* ☒ NA
b. equipment room: ☐ Yes ☐ No* ☒ NA
13. Proper safety precautions used: ☒ Yes ☐ No*
14. General condition: ☒ Good ☐ Fair ☐ Poor

Comments:

- **There was no discharge at the time of inspection, therefore there was no flow into or out of the unit.**

UNIT PROCESS: Post Aeration

1. Number of units: **1** In operation: **1**
2. Proper flow distribution between units: ☐ Yes ☐ No* ☒ NA
3. Evidence of following problems:
 - a. dead spots ☐ Yes* ☒ No
 - b. excessive foam ☐ Yes* ☒ No
 - c. poor aeration ☐ Yes* ☒ No
 - d. mechanical equipment failure ☐ Yes* ☐ No ☒ NA
4. How is the aerator controlled? ☒ Time clock ☐ Manual ☐ Continuous ☐ Other* ☐ NA
5. What is the current operating schedule? **15 minutes on, 15 minutes off**
6. Step weirs level: ☐ Yes ☐ No ☒ NA
7. Effluent D.O. level:
8. General condition: ☒ Good ☐ Fair ☐ Poor

Comments:

- **At the time of inspection, there was no flow into or out of the unit due to no discharge from the plant.**

UNIT PROCESS: Aerobic Digestion

1. Number of units: **1** In operation: **0**
2. Type of sludge treated [] Primary [X] WAS [] Other
3. Frequency of sludge application to digestors: **varies as needed**
4. Supernatant return rate: **not measured**
5. pH adjustment provided: [] Yes [X] No
Utilized: [] Yes [] No [X] NA
6. Tank contents well-mixed and relatively free of odors: [] Yes [] No* [X] NA
7. If diffused aeration is used, do diffusers require frequent cleaning?
[] Yes [X] No [] NA
8. Location of supernatant return: [X] Head [] Primary [] Other
9. Process control testing:
a. reduction of volatile solids [] Yes [X] No
b. pH [] Yes [X] No
c. alkalinity [] Yes [X] No
d. dissolved oxygen [] Yes [X] No
10. Foaming problem present: [] Yes* [X] No
11. Signs of short-circuiting or overloads: [] Yes* [X] No
12. General condition: [X] Good [] Fair [] Poor

Comments:

- **This unit is used as a sludge holding tank. Garth Septic Removal is contracted to pump and haul sludge to Remmington as needed.**

UNIT PROCESS: Effluent/Plant Outfall

1. Type Outfall ☒ Shore based ☐ Submerged
2. Type if shore based: ☐ Wingwall ☐ Headwall ☐ Rip Rap ☒ Direct Pipe
3. Flapper valve: ☐ Yes ☒ No ☐ NA
4. Erosion of bank: ☐ Yes ☒ No ☐ NA
5. Effluent plume visible? ☐ Yes* ☒ No
6. Condition of outfall and supporting structures: ☒ Good ☐ Fair ☐ Poor*
7. Final effluent, evidence of following problems: **No Discharge**
 - a. oil sheen ☐ Yes* ☐ No
 - b. grease ☐ Yes* ☐ No
 - c. sludge bar ☐ Yes* ☐ No
 - d. turbid effluent ☐ Yes* ☐ No
 - e. visible foam ☐ Yes* ☐ No
 - f. unusual color ☐ Yes* ☐ No

Comments:

- **No discharge at the time of inspection.**
- **A path needs to be maintained for access to the outfall structure.**

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Permit No.: VA0060879

Facility Name: Rapidan Baptist Camp WWTP

Version: OWP Guidance Memo 00-2011 (8/24/00)

Receiving Stream: UT, Rapidan River

| Stream Information | | Stream Flows | | Mixing Information | | Effluent Information | |
|----------------------------------|------------|----------------------|----------|-------------------------|-------|----------------------------|----------|
| Mean Hardness (as CaCO3) = | 50 mg/L | 1Q10 (Annual) = | 0.07 MGD | Annual - 1Q10 Mix = | 100 % | Mean Hardness (as CaCO3) = | 50 mg/L |
| 90% Temperature (Annual) = | 26.1 deg C | 7Q10 (Annual) = | 0.09 MGD | - 7Q10 Mix = | 100 % | 90% Temp (Annual) = | 20 deg C |
| 90% Temperature (Wet season) = | 15 deg C | 30Q10 (Annual) = | 0.16 MGD | - 30Q10 Mix = | 100 % | 90% Temp (Wet season) = | 15 deg C |
| 90% Maximum pH = | 7.7 SU | 1Q10 (Wet season) = | 0.39 MGD | Wet Season - 1Q10 Mix = | 100 % | 90% Maximum pH = | 8.26 SU |
| 10% Maximum pH = | SU | 30Q10 (Wet season) = | 0.66 MGD | - 30Q10 Mix = | 100 % | 10% Maximum pH = | SU |
| Tier Designation (1 or 2) = | 1 | 30Q5 = | 0.23 MGD | | | Discharge Flow = | 0.02 MGD |
| Public Water Supply (PWS) Y/N? = | n | Harmonic Mean = | 1 MGD | | | | |
| Trout Present Y/N? = | n | | | | | | |
| Early Life Stages Present Y/N? = | y | | | | | | |

| Parameter (ug/l unless noted) | Background Conc. | Water Quality Criteria | | | Wasteload Allocations | | | Antidegradation Baseline | | | Antidegradation Allocations | | | Most Limiting Allocations | | |
|-------------------------------------|---------------------|------------------------|----------|----------|-----------------------|---------|----------|--------------------------|---------|----------|-----------------------------|---------|----------|---------------------------|---------|----------|
| | | Acute | Chronic | HH (PWS) | Acute | Chronic | HH (PWS) | Acute | Chronic | HH (PWS) | Acute | Chronic | HH (PWS) | Acute | Chronic | HH (PWS) |
| Acenaphthene | 0 | -- | -- | na | -- | -- | na | -- | -- | 1.2E+04 | -- | -- | -- | -- | -- | 1.2E+04 |
| Acrolein | 0 | -- | -- | na | -- | -- | na | -- | -- | 1.2E+02 | -- | -- | -- | -- | -- | 1.2E+02 |
| Acrylonitrile ^c | 0 | -- | -- | na | -- | -- | na | -- | -- | 1.3E+02 | -- | -- | -- | -- | -- | 1.3E+02 |
| Aldrin ^c | 0 | 3.0E+00 | -- | na | 1.4E+01 | -- | na | 2.6E-02 | -- | -- | -- | -- | -- | 1.4E+01 | -- | 2.6E-02 |
| Ammonia-N (mg/l) | 0 | 1.27E+01 | 1.70E+00 | na | 5.7E+01 | 1.5E+01 | na | -- | -- | -- | -- | -- | -- | 5.7E+01 | 1.5E+01 | na |
| Ammonia-N (mg/l) (High Flow) | 0 | 1.41E+01 | 3.43E+00 | na | 2.9E+02 | 1.2E+02 | na | -- | -- | -- | -- | -- | -- | 2.9E+02 | 1.2E+02 | na |
| Anthracene | 0 | -- | -- | na | 4.0E+04 | -- | na | 5.0E+05 | -- | -- | -- | -- | -- | -- | -- | 5.0E+05 |
| Antimony | 0 | -- | -- | na | 6.4E+02 | -- | na | 8.0E+03 | -- | -- | -- | -- | -- | -- | -- | 8.0E+03 |
| Arsenic | 0 | 3.4E+02 | 1.5E+02 | na | 1.5E+03 | 8.3E+02 | na | -- | -- | -- | -- | -- | -- | 1.5E+03 | 8.3E+02 | na |
| Benzo(a)anthracene ^c | 0 | -- | -- | na | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo(b)fluoranthene ^c | 0 | -- | -- | na | 5.1E+02 | -- | na | 2.6E+04 | -- | -- | -- | -- | -- | -- | -- | 2.6E+04 |
| Benzo(k)fluoranthene ^c | 0 | -- | -- | na | 2.0E-03 | -- | na | 1.0E-01 | -- | -- | -- | -- | -- | -- | -- | 1.0E-01 |
| Benzo(a)pyrene ^c | 0 | -- | -- | na | 1.8E-01 | -- | na | 9.2E+00 | -- | -- | -- | -- | -- | -- | -- | 9.2E+00 |
| Benzo(e)pyrene ^c | 0 | -- | -- | na | 1.8E-01 | -- | na | 9.2E+00 | -- | -- | -- | -- | -- | -- | -- | 9.2E+00 |
| 1-Chloroethyl Ether ^c | 0 | -- | -- | na | 1.8E-01 | -- | na | 9.2E+00 | -- | -- | -- | -- | -- | -- | -- | 9.2E+00 |
| 1-Chloroisopropyl Ether | 0 | -- | -- | na | 5.3E+00 | -- | na | 2.7E+02 | -- | -- | -- | -- | -- | -- | -- | 2.7E+02 |
| 2-Ethylhexyl Phthalate ^c | 0 | -- | -- | na | 6.5E+04 | -- | na | 8.1E+05 | -- | -- | -- | -- | -- | -- | -- | 8.1E+05 |
| Diethylhexyl Phthalate ^c | 0 | -- | -- | na | 2.2E+01 | -- | na | 1.1E+03 | -- | -- | -- | -- | -- | -- | -- | 1.1E+03 |
| Diethylhexyl Phthalate ^c | 0 | -- | -- | na | 1.4E+03 | -- | na | 7.1E+04 | -- | -- | -- | -- | -- | -- | -- | 7.1E+04 |
| Diethylhexyl Phthalate ^c | 0 | -- | -- | na | 1.9E+03 | -- | na | 2.4E+04 | -- | -- | -- | -- | -- | -- | -- | 2.4E+04 |
| Butylbenzylphthalate | 0 | 1.8E+00 | 6.6E-01 | na | 8.1E+00 | 3.6E+00 | na | -- | -- | -- | -- | -- | -- | 8.1E+00 | 3.6E+00 | na |
| Cadmium | 0 | -- | -- | na | 1.6E+01 | -- | na | 8.2E+02 | -- | -- | -- | -- | -- | -- | -- | 8.2E+02 |
| Carbon Tetrachloride ^c | 0 | 2.4E+00 | 4.3E-03 | na | 8.1E-03 | 2.4E-02 | na | 4.1E-01 | -- | -- | -- | -- | -- | 1.1E+01 | 2.4E-02 | na |
| Chlordane ^c | 0 | 8.6E+05 | 2.3E+05 | na | -- | -- | na | -- | -- | -- | -- | -- | -- | 3.9E+06 | 1.3E+06 | na |
| Chloride | 0 | 1.9E+01 | 1.1E+01 | na | -- | -- | na | -- | -- | -- | -- | -- | -- | 8.6E+01 | 6.1E+01 | na |
| Chlorobenzene | 0 | -- | -- | na | 1.6E+03 | -- | na | 2.0E+04 | -- | -- | -- | -- | -- | -- | -- | 2.0E+04 |

| Parameter (ug/l unless noted) | Background Conc. | Water Quality Criteria | | | | Wasteload Allocations | | | | Antidegradation Baseline | | | | Antidegradation Allocations | | | | Most Limiting Allocations | | | |
|--|---------------------|------------------------|---------|----------|---------|-----------------------|---------|----------|---------|--------------------------|---------|----------|---------|-----------------------------|---------|----------|---------|---------------------------|---------|----------|---------|
| | | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH |
| Chlorodibromomethane ^c | 0 | -- | -- | na | 1.3E+02 | -- | -- | na | 6.6E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 6.6E+03 |
| Chloroform | 0 | -- | -- | na | 1.1E+04 | -- | -- | na | 1.4E+05 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.4E+05 |
| 2-Chloronaphthalene | 0 | -- | -- | na | 1.6E+03 | -- | -- | na | 2.0E+04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.0E+04 |
| 2-Chlorophenol | 0 | -- | -- | na | 1.5E+02 | -- | -- | na | 1.9E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.9E+03 |
| Chlorpyrifos | 0 | 8.3E-02 | 4.1E-02 | na | -- | 3.7E-01 | 2.3E-01 | na | -- | 3.7E-01 | 2.3E-01 | na | -- | 3.7E-01 | 2.3E-01 | na | -- | 3.7E-01 | 2.3E-01 | na | -- |
| Chromium III | 0 | 3.2E+02 | 4.2E+01 | na | -- | 1.5E+03 | 2.3E+02 | na | -- | 1.5E+03 | 2.3E+02 | na | -- | 1.5E+03 | 2.3E+02 | na | -- | 1.5E+03 | 2.3E+02 | na | -- |
| Chromium VI | 0 | 1.6E+01 | 1.1E+01 | na | -- | 7.2E+01 | 6.1E+01 | na | -- | 7.2E+01 | 6.1E+01 | na | -- | 7.2E+01 | 6.1E+01 | na | -- | 7.2E+01 | 6.1E+01 | na | -- |
| Chromium, Total | 0 | -- | -- | 1.0E+02 | -- | -- | -- | na | -- | -- | -- | na | -- | -- | -- | na | -- | -- | -- | na | -- |
| Chrysene ^c | 0 | -- | -- | na | 1.8E-02 | -- | -- | na | 9.2E-01 | -- | -- | na | 9.2E-01 | -- | -- | na | 9.2E-01 | -- | -- | na | 9.2E-01 |
| Copper | 0 | 7.0E+00 | 5.0E+00 | na | -- | 3.1E+01 | 2.7E+01 | na | -- | 3.1E+01 | 2.7E+01 | na | -- | 3.1E+01 | 2.7E+01 | na | -- | 3.1E+01 | 2.7E+01 | na | -- |
| Cyanide, Free | 0 | 2.2E+01 | 5.2E+00 | na | 1.6E+04 | 9.9E+01 | 2.9E+01 | na | 2.0E+05 | 9.9E+01 | 2.9E+01 | na | 2.0E+05 | 9.9E+01 | 2.9E+01 | na | 2.0E+05 | 9.9E+01 | 2.9E+01 | na | 2.0E+05 |
| DDD ^c | 0 | -- | -- | na | 3.1E-03 | -- | -- | na | 1.6E-01 | -- | -- | na | 1.6E-01 | -- | -- | na | 1.6E-01 | -- | -- | na | 1.6E-01 |
| DDE ^c | 0 | -- | -- | na | 2.2E-03 | -- | -- | na | 1.1E-01 | -- | -- | na | 1.1E-01 | -- | -- | na | 1.1E-01 | -- | -- | na | 1.1E-01 |
| DDT ^c | 0 | 1.1E+00 | 1.0E-03 | na | 2.2E-03 | 5.0E+00 | 5.5E-03 | na | 1.1E-01 | 5.0E+00 | 5.5E-03 | na | 1.1E-01 | 5.0E+00 | 5.5E-03 | na | 1.1E-01 | 5.0E+00 | 5.5E-03 | na | 1.1E-01 |
| Demeton | 0 | -- | 1.0E-01 | na | -- | -- | 5.5E-01 | na | -- | -- | 5.5E-01 | na | -- | -- | 5.5E-01 | na | -- | -- | 5.5E-01 | na | -- |
| Diazinon | 0 | 1.7E-01 | 1.7E-01 | na | -- | 7.7E-01 | 9.4E-01 | na | -- | 7.7E-01 | 9.4E-01 | na | -- | 7.7E-01 | 9.4E-01 | na | -- | 7.7E-01 | 9.4E-01 | na | -- |
| Dibenz(a,h)anthracene ^c | 0 | -- | -- | na | 1.8E-01 | -- | -- | na | 9.2E+00 | -- | -- | na | 9.2E+00 | -- | -- | na | 9.2E+00 | -- | -- | na | 9.2E+00 |
| 1,2-Dichlorobenzene | 0 | -- | -- | na | 1.3E+03 | -- | -- | na | 1.6E+04 | -- | -- | na | 1.6E+04 | -- | -- | na | 1.6E+04 | -- | -- | na | 1.6E+04 |
| 1,3-Dichlorobenzene | 0 | -- | -- | na | 9.6E+02 | -- | -- | na | 1.2E+04 | -- | -- | na | 1.2E+04 | -- | -- | na | 1.2E+04 | -- | -- | na | 1.2E+04 |
| 1,4-Dichlorobenzene | 0 | -- | -- | na | 1.9E+02 | -- | -- | na | 2.4E+03 | -- | -- | na | 2.4E+03 | -- | -- | na | 2.4E+03 | -- | -- | na | 2.4E+03 |
| 3,3-Dichlorobenzidine ^c | 0 | -- | -- | na | 2.8E-01 | -- | -- | na | 1.4E+01 | -- | -- | na | 1.4E+01 | -- | -- | na | 1.4E+01 | -- | -- | na | 1.4E+01 |
| Dichlorobromomethane ^c | 0 | -- | -- | na | 1.7E+02 | -- | -- | na | 8.7E+03 | -- | -- | na | 8.7E+03 | -- | -- | na | 8.7E+03 | -- | -- | na | 8.7E+03 |
| 1,2-Dichloroethane ^c | 0 | -- | -- | na | 3.7E+02 | -- | -- | na | 1.9E+04 | -- | -- | na | 1.9E+04 | -- | -- | na | 1.9E+04 | -- | -- | na | 1.9E+04 |
| 1,1-Dichloroethylene | 0 | -- | -- | na | 7.1E+03 | -- | -- | na | 8.9E+04 | -- | -- | na | 8.9E+04 | -- | -- | na | 8.9E+04 | -- | -- | na | 8.9E+04 |
| 1,2-trans-dichloroethylene | 0 | -- | -- | na | 1.0E+04 | -- | -- | na | 1.3E+05 | -- | -- | na | 1.3E+05 | -- | -- | na | 1.3E+05 | -- | -- | na | 1.3E+05 |
| 2,4-Dichlorophenol | 0 | -- | -- | na | 2.9E+02 | -- | -- | na | 3.6E+03 | -- | -- | na | 3.6E+03 | -- | -- | na | 3.6E+03 | -- | -- | na | 3.6E+03 |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | na | -- | -- | -- | na | -- | -- | -- | na | -- |
| 1,2-Dichloropropane ^c | 0 | -- | -- | na | 1.5E+02 | -- | -- | na | 7.7E+03 | -- | -- | na | 7.7E+03 | -- | -- | na | 7.7E+03 | -- | -- | na | 7.7E+03 |
| 1,3-Dichloropropene ^c | 0 | -- | -- | na | 2.1E+02 | -- | -- | na | 1.1E+04 | -- | -- | na | 1.1E+04 | -- | -- | na | 1.1E+04 | -- | -- | na | 1.1E+04 |
| Dieldrin ^c | 0 | 2.4E-01 | 5.6E-02 | na | 5.4E-04 | 1.1E+00 | 3.1E-01 | na | 2.8E-02 | 1.1E+00 | 3.1E-01 | na | 2.8E-02 | 1.1E+00 | 3.1E-01 | na | 2.8E-02 | 1.1E+00 | 3.1E-01 | na | 2.8E-02 |
| Diethyl Phthalate | 0 | -- | -- | na | 4.4E+04 | -- | -- | na | 5.5E+05 | -- | -- | na | 5.5E+05 | -- | -- | na | 5.5E+05 | -- | -- | na | 5.5E+05 |
| 2,4-Dimethylphenol | 0 | -- | -- | na | 8.5E+02 | -- | -- | na | 1.1E+04 | -- | -- | na | 1.1E+04 | -- | -- | na | 1.1E+04 | -- | -- | na | 1.1E+04 |
| Dimethyl Phthalate | 0 | -- | -- | na | 1.1E+06 | -- | -- | na | 1.4E+07 | -- | -- | na | 1.4E+07 | -- | -- | na | 1.4E+07 | -- | -- | na | 1.4E+07 |
| Di-n-Butyl Phthalate | 0 | -- | -- | na | 4.5E+03 | -- | -- | na | 5.6E+04 | -- | -- | na | 5.6E+04 | -- | -- | na | 5.6E+04 | -- | -- | na | 5.6E+04 |
| 2,4 Dinitrophenol | 0 | -- | -- | na | 5.3E+03 | -- | -- | na | 6.6E+04 | -- | -- | na | 6.6E+04 | -- | -- | na | 6.6E+04 | -- | -- | na | 6.6E+04 |
| 2-Methyl-4,6-Dinitrophenol | 0 | -- | -- | na | 2.8E+02 | -- | -- | na | 3.5E+03 | -- | -- | na | 3.5E+03 | -- | -- | na | 3.5E+03 | -- | -- | na | 3.5E+03 |
| 2,4-Dinitrotoluene ^c | 0 | -- | -- | na | 3.4E+01 | -- | -- | na | 1.7E+03 | -- | -- | na | 1.7E+03 | -- | -- | na | 1.7E+03 | -- | -- | na | 1.7E+03 |
| Dioxin 2,3,7,8- tetrachlorodibenzo-p-dioxin | 0 | -- | -- | na | 5.1E-08 | -- | -- | na | 6.4E-07 | -- | -- | na | 6.4E-07 | -- | -- | na | 6.4E-07 | -- | -- | na | 6.4E-07 |
| 1,2-Diphenylhydrazine ^c | 0 | -- | -- | na | 2.0E+00 | -- | -- | na | 1.0E+02 | -- | -- | na | 1.0E+02 | -- | -- | na | 1.0E+02 | -- | -- | na | 1.0E+02 |
| Alpha-Endosulfan | 0 | 2.2E-01 | 5.6E-02 | na | 8.9E+01 | 9.9E-01 | 3.1E-01 | na | 1.1E+03 | 9.9E-01 | 3.1E-01 | na | 1.1E+03 | 9.9E-01 | 3.1E-01 | na | 1.1E+03 | 9.9E-01 | 3.1E-01 | na | 1.1E+03 |
| Beta-Endosulfan | 0 | 2.2E-01 | 5.6E-02 | na | 8.9E+01 | 9.9E-01 | 3.1E-01 | na | 1.1E+03 | 9.9E-01 | 3.1E-01 | na | 1.1E+03 | 9.9E-01 | 3.1E-01 | na | 1.1E+03 | 9.9E-01 | 3.1E-01 | na | 1.1E+03 |
| Alpha + Beta Endosulfan | 0 | 2.2E-01 | 5.6E-02 | -- | -- | 9.9E-01 | 3.1E-01 | -- | -- | 9.9E-01 | 3.1E-01 | -- | -- | 9.9E-01 | 3.1E-01 | -- | -- | 9.9E-01 | 3.1E-01 | -- | -- |
| Endosulfan Sulfate | 0 | -- | -- | na | 8.9E+01 | -- | -- | na | 1.1E+03 | -- | -- | na | 1.1E+03 | -- | -- | na | 1.1E+03 | -- | -- | na | 1.1E+03 |
| Endrin | 0 | 8.8E-02 | 3.6E-02 | na | 6.0E-02 | 3.9E-01 | 2.0E-01 | na | 7.5E-01 | 3.9E-01 | 2.0E-01 | na | 7.5E-01 | 3.9E-01 | 2.0E-01 | na | 7.5E-01 | 3.9E-01 | 2.0E-01 | na | 7.5E-01 |
| Endrin Aldehyde | 0 | -- | -- | na | 3.0E-01 | -- | -- | na | 3.8E+00 | -- | -- | na | 3.8E+00 | -- | -- | na | 3.8E+00 | -- | -- | na | 3.8E+00 |

| Parameter (ug/l unless noted) | Background Conc. | Water Quality Criteria | | | | Wastload Allocations | | | | Antidegradation Baseline | | | | Antidegradation Allocations | | | | Most Limiting Allocations | | | |
|--|---------------------|------------------------|---------|----------|---------|----------------------|---------|----------|---------|--------------------------|---------|----------|----|-----------------------------|---------|----------|----|---------------------------|---------|----------|---------|
| | | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH |
| Ethylbenzene | 0 | -- | -- | na | 2.1E+03 | -- | -- | na | 2.6E+04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.6E+04 |
| Fluoranthene | 0 | -- | -- | na | 1.4E+02 | -- | -- | na | 1.8E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.8E+03 |
| Fluorene | 0 | -- | -- | na | 5.3E+03 | -- | -- | na | 6.6E+04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 6.6E+04 |
| Foaming Agents | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Guthion | 0 | -- | 1.0E-02 | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 5.5E-02 | na | -- |
| Heptachlor ^C | 0 | 5.2E-01 | 3.8E-03 | na | 7.9E-04 | 2.3E+00 | 2.1E-02 | na | 4.0E-02 | -- | -- | -- | -- | -- | -- | -- | -- | 2.3E+00 | 2.1E-02 | na | 4.0E-02 |
| Heptachlor Epoxide ^C | 0 | 5.2E-01 | 3.8E-03 | na | 3.9E-04 | 2.3E+00 | 2.1E-02 | na | 2.0E-02 | -- | -- | -- | -- | -- | -- | -- | -- | 2.3E+00 | 2.1E-02 | na | 2.0E-02 |
| Hexachlorobenzene ^C | 0 | -- | -- | na | 2.9E-03 | -- | -- | na | 1.5E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.5E-01 |
| Hexachlorobutadiene ^C | 0 | -- | -- | na | 1.8E+02 | -- | -- | na | 9.2E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 9.2E+03 |
| Hexachlorocyclohexane | 0 | -- | -- | na | 4.9E-02 | -- | -- | na | 2.5E+00 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.5E+00 |
| Alpha-BHC ^C | 0 | -- | -- | na | 1.7E-01 | -- | -- | na | 8.7E+00 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 8.7E+00 |
| Hexachlorocyclohexane | 0 | 9.5E-01 | na | na | 1.8E+00 | 4.3E+00 | -- | na | 9.2E+01 | -- | -- | -- | -- | -- | -- | -- | -- | 4.3E+00 | -- | na | 9.2E+01 |
| Gamma-BHC ^C (Lindane) | 0 | -- | -- | na | 1.1E+03 | -- | -- | na | 1.4E+04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.4E+04 |
| Hexachlorocyclopentadiene | 0 | -- | -- | na | 3.3E+01 | -- | -- | na | 1.7E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.7E+03 |
| Hexachloroethane ^C | 0 | -- | 2.0E+00 | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.1E+01 | na | -- |
| Hydrogen Sulfide | 0 | -- | -- | na | 1.8E-01 | -- | -- | na | 9.2E+00 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 9.2E+00 |
| Indeno (1,2,3-cd) pyrene ^C | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Iron | 0 | -- | -- | na | 9.6E+03 | -- | -- | na | 4.9E+05 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 4.9E+05 |
| Isophorone ^C | 0 | -- | 0.0E+00 | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.0E+00 | na | -- |
| Kepone | 0 | 4.9E+01 | 5.6E+00 | na | -- | 2.2E+02 | 3.1E+01 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2.2E+02 | 3.1E+01 | na | -- |
| Lead | 0 | -- | 1.0E-01 | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 5.5E-01 | na | -- |
| Malathion | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Manganese | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Mercury | 0 | 1.4E+00 | 7.7E-01 | -- | -- | 6.3E+00 | 4.2E+00 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 6.3E+00 | 4.2E+00 | -- | -- |
| Methyl Bromide | 0 | -- | -- | na | 1.5E+03 | -- | -- | na | 1.9E+04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.9E+04 |
| Methylene Chloride ^C | 0 | -- | -- | na | 5.9E+03 | -- | -- | na | 3.0E+05 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 3.0E+05 |
| Methoxychlor | 0 | -- | 3.0E-02 | na | -- | -- | 1.7E-01 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.7E-01 | na | -- |
| Mirex | 0 | -- | 0.0E+00 | na | -- | -- | 0.0E+00 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.0E+00 | na | -- |
| Nickel | 0 | 1.0E+02 | 1.1E+01 | na | 4.6E+03 | 4.6E+02 | 6.2E+01 | na | 5.8E+04 | -- | -- | -- | -- | -- | -- | -- | -- | 4.6E+02 | 6.2E+01 | na | 5.8E+04 |
| Nitrate (as N) | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Nitrobenzene | 0 | -- | -- | na | 6.9E+02 | -- | -- | na | 8.6E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 8.6E+03 |
| N-Nitrosodimethylamine ^C | 0 | -- | -- | na | 3.0E+01 | -- | -- | na | 1.5E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.5E+03 |
| N-Nitrosodiphenylamine ^C | 0 | -- | -- | na | 6.0E+01 | -- | -- | na | 3.1E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 3.1E+03 |
| N-Nitrosodi-n-propylamine ^C | 0 | -- | -- | na | 5.1E+00 | -- | -- | na | 2.6E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.6E+02 |
| Nonylphenol | 0 | 2.8E+01 | 6.6E+00 | -- | -- | 1.3E+02 | 3.6E+01 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.3E+02 | 3.6E+01 | na | -- |
| Parathion | 0 | 6.5E-02 | 1.3E-02 | na | -- | 2.9E-01 | 7.2E-02 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2.9E-01 | 7.2E-02 | na | -- |
| PCB Total ^C | 0 | -- | 1.4E-02 | na | 6.4E-04 | -- | 7.7E-02 | na | 3.3E-02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 7.7E-02 | na | 3.3E-02 |
| Pentachlorophenol ^C | 0 | 7.7E-03 | 5.9E-03 | na | 3.0E+01 | 3.5E-02 | 3.2E-02 | na | 1.5E+03 | -- | -- | -- | -- | -- | -- | -- | -- | 3.5E-02 | 3.2E-02 | na | 1.5E+03 |
| Phenol | 0 | -- | -- | na | 8.6E+05 | -- | -- | na | 1.1E+07 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.1E+07 |
| Pyrene | 0 | -- | -- | na | 4.0E+03 | -- | -- | na | 5.0E+04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 5.0E+04 |
| Radionuclides | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Gross Alpha Activity (pCi/L) | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Beta and Photon Activity (mrem/yr) | 0 | -- | -- | na | 4.0E+00 | -- | -- | na | 5.0E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 5.0E+01 |
| Radium 226 + 228 (pCi/L) | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Uranium (ug/l) | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |

| Parameter (ug/l unless noted) | Background Conc. | Water Quality Criteria | | | | Wasteload Allocations | | | | Antidegradation Baseline | | | | Antidegradation Allocations | | | | Most Limiting Allocations | | | |
|--|---------------------|------------------------|---------|----------|---------|-----------------------|---------|----------|---------|--------------------------|---------|----------|----|-----------------------------|---------|----------|----|---------------------------|---------|----------|---------|
| | | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH |
| Selenium, Total Recoverable ^C | 0 | 2.0E+01 | 5.0E+00 | na | 4.2E+03 | 9.0E+01 | 2.8E+01 | na | 5.3E+04 | -- | -- | -- | -- | -- | -- | -- | -- | 9.0E+01 | 2.8E+01 | na | 5.3E+04 |
| Silver | 0 | 1.0E+00 | -- | na | -- | 4.7E+00 | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 4.7E+00 | -- | na | -- |
| Sulfate | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| 1,1,2,2-Tetrachloroethane ^C | 0 | -- | -- | na | 4.0E+01 | -- | -- | na | 2.0E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.0E+03 |
| Tetrachloroethylene ^C | 0 | -- | -- | na | 3.3E+01 | -- | -- | na | 1.7E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.7E+03 |
| Thallium | 0 | -- | -- | na | 4.7E-01 | -- | -- | na | 5.9E+00 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 5.9E+00 |
| Toluene | 0 | -- | -- | na | 6.0E+03 | -- | -- | na | 7.5E+04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 7.5E+04 |
| Total dissolved solids | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Toxaphene ^C | 0 | 7.3E-01 | 2.0E-04 | na | 2.8E-03 | 3.3E+00 | 1.1E-03 | na | 1.4E-01 | -- | -- | -- | -- | -- | -- | -- | -- | 3.3E+00 | 1.1E-03 | na | 1.4E-01 |
| Tributyltin | 0 | 4.6E-01 | 7.2E-02 | na | -- | 2.1E+00 | 4.0E-01 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2.1E+00 | 4.0E-01 | na | -- |
| 1,2,4-Trichlorobenzene | 0 | -- | -- | na | 7.0E+01 | -- | -- | na | 8.8E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 8.8E+02 |
| 1,1,2-Trichloroethane ^C | 0 | -- | -- | na | 1.6E+02 | -- | -- | na | 8.2E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 8.2E+03 |
| Trichloroethylene ^C | 0 | -- | -- | na | 3.0E+02 | -- | -- | na | 1.5E+04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.5E+04 |
| 2,4,6-Trichlorophenol ^C | 0 | -- | -- | na | 2.4E+01 | -- | -- | na | 1.2E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.2E+03 |
| 2-(2,4,5-Trichlorophenoxy)propionic acid (Sivex) | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Vinyl Chloride ^C | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Zinc | 0 | 6.5E+01 | 6.6E+01 | na | 2.6E+04 | 2.9E+02 | 3.6E+02 | na | 3.3E+05 | -- | -- | -- | -- | -- | -- | -- | -- | 2.9E+02 | 3.6E+02 | na | 3.3E+05 |

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
Antidegradation WLAs are based upon a complete mix.
Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQOC - background conc.) + background conc.) for acute and chronic
= (0.1(WQOC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Armonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

| Metal | Target Value (SSTV) |
|--------------|---------------------|
| Antimony | 8.0E+03 |
| Arsenic | 5.0E+02 |
| Barium | na |
| Cadmium | 2.2E+00 |
| Chromium III | 1.4E+02 |
| Chromium VI | 2.9E+01 |
| Copper | 1.3E+01 |
| Iron | na |
| Lead | 1.8E+01 |
| Manganese | na |
| Mercury | 2.5E+00 |
| Nickel | 3.7E+01 |
| Selenium | 1.7E+01 |
| Silver | 1.9E+00 |
| Zinc | 1.2E+02 |

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Mixing Zone Predictions for

Rapidan Baptist Camp WWTP

Effluent Flow = 0.02 MGD
Stream 7Q10 = .48 MGD
Stream 30Q10 = .66 MGD
Stream 1Q10 = .39 MGD
Stream slope = .001 ft/ft
Stream width = 10 ft
Bottom scale = 3
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = .3685 ft
Length = 209.26 ft
Velocity = .21 ft/sec
Residence Time = .0115 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = .4458 ft
Length = 176.85 ft
Velocity = .2361 ft/sec
Residence Time = .0087 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .3262 ft
Length = 232.87 ft
Velocity = .1946 ft/sec
Residence Time = .3324 hours

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.

Mixing Zone Predictions for

Rapidan Baptist Camp WWTP

Effluent Flow = 0.02 MGD
Stream 7Q10 = .09 MGD
Stream 30Q10 = .16 MGD
Stream 1Q10 = .07 MGD
Stream slope = .001 ft/ft
Stream width = 5 ft
Bottom scale = 3
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = .2266 ft
Length = 77.62 ft
Velocity = .1503 ft/sec
Residence Time = .006 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = .3081 ft
Length = 58.92 ft
Velocity = .1808 ft/sec
Residence Time = .0038 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .2001 ft
Length = 86.7 ft
Velocity = .1392 ft/sec
Residence Time = .173 hours

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.

| Station_ID | Station_De | Collection_Date_Ti | Field_pH | DO_Probe | Temp_Celsuis |
|-----------------|------------|--------------------|----------|----------|--------------|
| 3-XBO000.26 | Rt. # 621 | 08/15/01 | 7.01 | 6.37 | 24.06 |
| 3-XBO000.26 | Rt. # 621 | 02/12/03 | 7.17 | 13.31 | 2.31 |
| 3-XBO000.26 | Rt. # 621 | 03/18/03 | 7.22 | 10.02 | 12.64 |
| 3-XBO000.26 | Rt. # 621 | 04/30/03 | 7.38 | 11.37 | 14.19 |
| 3-XBO000.26 | Rt. # 621 | 05/27/03 | 6.86 | 8.3 | 15.09 |
| 3-XBO000.26 | Rt. # 621 | 06/17/03 | 7.01 | 8.37 | 17.15 |
| 90th percentile | | | 7.38 | | 24.06 |

| Month/Year | Date | Time | pH of effluent |
|------------|------|-------|----------------|
| Jun-08 | 17 | 19:10 | 8.27 |
| Jun-08 | 18 | 19:00 | 8.29 |
| Jun-08 | 19 | 19:58 | 7.75 |
| Jun-08 | 20 | 17:21 | 7.98 |
| Jun-08 | 21 | 10:33 | 7.99 |
| Jun-08 | 22 | 14:44 | 7.95 |
| Jun-08 | 23 | 19:02 | 7.92 |
| Jun-08 | 24 | 20:04 | 7.85 |
| Jun-08 | 25 | 19:42 | 7.88 |
| Jun-08 | 26 | 19:40 | 7.96 |
| Jun-08 | 27 | 19:24 | 7.8 |
| Jun-08 | 28 | 15:07 | 7.76 |
| Jun-08 | 29 | 15:55 | 7.97 |
| Jun-08 | 30 | 19:38 | 7.98 |
| Jul-08 | 1 | 7:00 | 8.19 |
| Jul-08 | 2 | 17:51 | 8.24 |
| Jul-08 | 6 | 13:35 | 8.12 |
| Jul-08 | 7 | 18:51 | 8.29 |
| Jul-08 | 9 | 19:10 | 7.67 |
| Jul-08 | 10 | 19:15 | 7.85 |
| Jul-08 | 14 | 19:10 | 8.3 |
| Jul-08 | 15 | 19:25 | 7.85 |
| Jul-08 | 16 | 19:23 | 7.95 |
| Jul-08 | 17 | 7:55 | 7.96 |
| Jul-08 | 18 | 7:52 | 7.86 |
| Jul-08 | 19 | 8:00 | 7.87 |
| Jul-08 | 20 | 14:35 | 8.03 |
| Jul-08 | 21 | 19:35 | 7.94 |
| Jul-08 | 22 | 7:05 | 8.01 |
| Jul-08 | 23 | 18:53 | 7.88 |
| Jul-08 | 24 | 7:05 | 7.89 |
| Jul-08 | 25 | 7:30 | 7.95 |
| Jul-08 | 26 | 10:05 | 7.98 |
| Jul-08 | 27 | 13:15 | 7.94 |
| Jul-08 | 28 | 7:10 | 8.05 |
| Jul-08 | 29 | 18:59 | 8.28 |
| Jul-08 | 30 | 7:05 | 7.83 |
| Jul-08 | 31 | 7:15 | 7.89 |
| Aug-08 | 1 | 7:15 | 7.86 |
| Aug-08 | 2 | 7:10 | 8.1 |
| Aug-08 | 3 | 18:15 | 8.1 |
| Aug-08 | 4 | 19:27 | 7.85 |
| Aug-08 | 5 | 18:40 | 8.08 |
| Aug-08 | 6 | 18:28 | 8.03 |

90th percentile pH

8.26

| | | | |
|--------|----|-------|------|
| Aug-08 | 7 | 18:37 | 8.08 |
| Aug-08 | 8 | 19:13 | 7.95 |
| Aug-08 | 9 | 13:25 | 8.25 |
| Aug-08 | 11 | 16:08 | 7.9 |
| Aug-08 | 12 | 7:10 | 8.11 |
| Aug-08 | 13 | 7:20 | 8.7 |
| Aug-08 | 14 | 7:10 | 8.26 |
| Aug-08 | 15 | 7:10 | 7.86 |
| Aug-08 | 16 | 7:10 | 8.3 |
| Jun-09 | 3 | 17:17 | 7.49 |
| Jun-09 | 4 | 15:55 | 7.78 |
| Jun-09 | 5 | 16:53 | 7.36 |
| Jun-09 | 6 | 8:53 | 7.84 |
| Jun-09 | 10 | 19:40 | 7.88 |
| Jun-09 | 11 | 16:30 | 8.04 |
| Jun-09 | 12 | 18:15 | 8.2 |
| Jun-09 | 13 | 20:15 | 7.78 |
| Jun-09 | 14 | 7:05 | 7.89 |
| Jun-09 | 16 | 7:03 | 8.08 |
| Jun-09 | 17 | 7:51 | 7.93 |
| Jun-09 | 18 | 7:10 | 7.94 |
| Jun-09 | 19 | 7:00 | 7.78 |
| Jun-09 | 20 | 19:05 | 7.83 |
| Jun-09 | 21 | 15:35 | 7.77 |
| Jun-09 | 22 | 7:10 | 7.8 |
| Jun-09 | 23 | 7:05 | 7.84 |
| Jun-09 | 24 | 7:05 | 7.82 |
| Jun-09 | 25 | 7:01 | 7.77 |
| Jun-09 | 26 | 7:05 | 7.81 |
| Jun-09 | 27 | 7:01 | 7.81 |
| Jun-09 | 30 | 7:05 | 7.8 |
| Jul-09 | 3 | 19:21 | 7.71 |
| | 4 | 7:01 | 7.81 |
| | 5 | 14:05 | 8.02 |
| | 6 | 20:25 | 7.73 |
| | 7 | 7:09 | 7.84 |
| | 8 | 7:10 | 7.78 |
| | 9 | 19:35 | 7.84 |
| | 10 | 7:10 | 7.93 |
| | 11 | 8:30 | 7.97 |
| | 13 | 19:15 | 8.28 |
| | 14 | 7:10 | 7.92 |
| | 15 | 7:10 | 7.81 |
| | 16 | 7:14 | 7.78 |
| | 17 | 16:55 | 7.77 |
| | 18 | 9:00 | 7.63 |
| | 20 | 19:20 | 7.67 |

| | | | |
|--------|----|-------|------|
| Jul-09 | 21 | 7:10 | 7.75 |
| | 22 | 7:30 | 7.63 |
| | 23 | 7:05 | 7.58 |
| | 24 | 7:05 | 7.60 |
| | 25 | 10:44 | 7.70 |
| | 26 | 16:01 | 7.88 |
| | 27 | 7:07 | 7.87 |
| | 28 | 7:09 | 7.88 |
| | 29 | 7:11 | 7.91 |
| | 30 | 8:00 | 7.85 |
| | 31 | 7:17 | 7.68 |
| Aug-09 | 1 | 7:08 | 7.8 |
| | 2 | 14:02 | 7.82 |
| | 3 | 7:15 | 7.9 |
| | 4 | 7:11 | 8.06 |
| | 5 | 7:15 | 8.07 |
| | 6 | 7:28 | 7.95 |
| | 7 | 7:09 | 7.91 |
| | 8 | 7:10 | 7.79 |
| | 9 | 14:40 | 7.72 |
| | 10 | 19:25 | 7.79 |
| | 11 | 8:45 | 7.78 |
| Aug-09 | 12 | 9:50 | 7.76 |
| | 13 | 9:30 | 7.83 |
| | 14 | 13:10 | 8 |
| | 15 | 17:30 | 7.98 |
| | 16 | 15:05 | 7.9 |
| | 17 | 8:45 | 7.99 |
| | 19 | 17:16 | 7.94 |
| | 20 | 8:15 | 7.78 |
| | 21 | 11:26 | 7.97 |
| | 19 | 19:30 | 7.95 |
| | 20 | 12:40 | 7.67 |
| Mar-10 | 21 | 18:00 | 7.78 |
| | 22 | 13:15 | 7.52 |
| | 23 | 9:00 | 8.61 |
| | 24 | 16:30 | 7.67 |
| | 16 | 7:10 | 8.18 |
| | 17 | 7:05 | 7.96 |
| | 18 | 7:20 | 8.18 |
| | 19 | 8:40 | 8.2 |
| | 20 | 15:30 | 8.16 |
| | 21 | 7:10 | 7.99 |
| | 22 | 7:05 | 7.84 |
| Jun-10 | 23 | 7:08 | 7.59 |
| | 24 | 7:05 | 7.71 |

| | | | |
|--------|----|-------|------|
| Jun-10 | 25 | 7:00 | 7.81 |
| | 30 | 7:00 | 7.89 |
| Jul-10 | 1 | 7:04 | 8.05 |
| | 2 | 7:07 | 8.39 |
| | 3 | 7:20 | 8.17 |
| | 4 | 15:05 | 8.23 |
| | 5 | 7:53 | 8.17 |
| | 6 | 7:55 | 8.02 |
| | 7 | 7:10 | 8.01 |
| | 8 | 7:20 | 7.96 |
| | 9 | 7:46 | 8.3 |
| | 10 | 9:15 | 8.04 |
| | 12 | 20:20 | 7.9 |
| | 13 | 7:15 | 8 |
| | 14 | 7:13 | 7.97 |
| | 15 | 7:15 | 7.92 |
| | 16 | 7:20 | 7.93 |
| | 17 | 9:45 | 8.1 |
| | 19 | 20:20 | 7.89 |
| | 20 | 7:10 | 8.19 |
| | 21 | 7:08 | 7.93 |
| | 22 | 7:20 | 8.04 |
| | 23 | 7:25 | 8.04 |
| | 24 | 17:25 | 8.08 |
| | 26 | 19:30 | 8.43 |
| | 30 | 19:40 | 8.24 |
| Jul-10 | 31 | 7:36 | 8.27 |
| Aug-10 | 1 | 15:30 | 8.25 |
| | 2 | 7:20 | 8.32 |
| | 3 | 7:32 | 8.16 |
| | 4 | 7:05 | 8.28 |
| | 5 | 7:08 | 8.28 |
| | 6 | 7:05 | 8.28 |
| | 24 | 17:00 | 8.03 |
| Aug-10 | 25 | 8:15 | 8.07 |

2006 Limit Evaluation

Facility = Rapidan Baptist Camp STP

Chemical = Chlorine

Chronic averaging period = 30

WLAa = 51

WLAc = 37

Q.L. = 100

samples/mo. = 30

samples/wk. = 8

Summary of Statistics:

observations = 1

Expected Value = 200

Variance = 14400

C.V. = 0.6

97th percentile daily values = 486.683

97th percentile 4 day average = 332.758

97th percentile 30 day average = 241.210

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity

Maximum Daily Limit = 51

Average Weekly limit = 30.4217593810133 *mg/L*

Average Monthly Limit = 25.2766793572516 *mg/L*

The data are:

•
••

200

AVG WEEKLY LIMIT = 0.03 *mg/L*

AVG MONTHLY LIMIT = 0.025 *mg/L*

1/13/2011 8:29:36 AM

Facility = Rapidan Baptist Camp WWTP

Chemical = Total Residual Chlorine

Chronic averaging period = 4

WLAa = 0.086

WLAc = 0.061 > mg/L

Q.L. = .1

samples/mo. = 30

samples/wk. = 8

Summary of Statistics:

observations = 1

Expected Value = .2

Variance = .0144

C.V. = 0.6

97th percentile daily values = .486683

97th percentile 4 day average = .332758

97th percentile 30 day average = .241210

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity

Maximum Daily Limit = 0.086

Average Weekly limit = 0.051299437387591

Average Monthly Limit = 4.26234200926204E-02

The data are:

0.2 mg/L

Analysis of the Rapidan Baptist Youth Camp (Jun-May Season) effluent data for Ammonia

The statistics for Ammonia are:

| | | |
|-------------------------|---|--|
| Number of values | = | 1 |
| Quantification level | = | .2 |
| Number < quantification | = | 0 |
| Expected value | = | 10 |
| Variance | = | 36.00001 |
| C.V. | = | .6 |
| 97th percentile | = | 24.33418 |
| Statistics used | = | Reasonable potential assumptions - Type 2 data |

The WLAs for Ammonia are:

| | | |
|------------------|---|----------|
| Acute WLA | = | 30.82831 |
| Chronic WLA | = | 5.01928 |
| Human Health WLA | = | ---- |

The limits are based on chronic toxicity and 1 samples/month.

| | | |
|-----------------------|---|----------|
| Maximum daily limit | = | 7.341073 |
| Average monthly limit | = | 7.341073 |

7.3 mg/L

1. --

DATA

10

Analysis of the Rapidan Baptist Youth Camp (Dec-May Season) effluent data for Ammonia

The statistics for Ammonia are:

| | | |
|-------------------------|---|--|
| Number of values | = | 1 |
| Quantification level | = | .2 |
| Number < quantification | = | 0 |
| Expected value | = | 10 |
| Variance | = | 36.00001 |
| C.V. | = | .6 |
| 97th percentile | = | 24.33418 |
| Statistics used | = | Reasonable potential assumptions - Type 2 data |

The WLAs for Ammonia are:

| | | |
|------------------|---|----------|
| Acute WLA | = | 250.617 |
| Chronic WLA | = | 54.35336 |
| Human Health WLA | = | ---- |

The limits are based on chronic toxicity and 1 samples/month.

NO LIMIT NEEDED FOR Ammonia

DATA

10

Limit from 1995-2000 permit

1/20/2011 7:01:49 AM

Facility = Rapidan Baptist Camp
Chemical = Ammonia as N
Chronic averaging period = 30
WLAa = 57
WLAc = 15
Q.L. = .2
samples/mo. = 1
samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average = 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

MEMORANDUM

State Water Control Board

2111 North Hamilton Street

P. O. Box 11143

Richmond, VA. 23230

SUBJECT: Madison County-LHS 120-Baptist Youth Camp

TO: File

FROM: Gary N. Moore

DATE: November 29, 1973

COPIES:

Rochelle Quadrangle

Proposed plant: .02 MGD

POD will be downstream from the lake, 200 ft. (north side of) above Rocky Run, approximately .5 mi. above the Rapidan.

Off Route 621 between U.S. 29 and Rochelle, Virginia on north and south side of Route 621.

$Q = .0081 \text{ MGD}$ DA above POD = $.28 \text{ mi}^2$

$Q = .0711 \text{ MGD}$ DA of South Fork of Rocky Run = 2.45 mi^2

$Q = .1074 \text{ MGD}$ DA above confluence of unnamed tributary and North Fork Rocky Run = 3.7 mi^2

Critical flow = $.045 \text{ cfs/sq. mi.}$ (Rapidan River near Ruckersville),

DA of Rapidan River above gaging station near Ruckersville = 111 mi^2

DA between gaging station and confluence of

Rocky Run and Rapidan River = 16.6 mi^2

$Q = 3.70 \text{ MGD}$ Total DA of Rapidan River above the point where Rocky Run enters it = $111 + 16.6 = 127.6 \text{ mi}^2$

Distance from POD to Rocky Run = $.04 \text{ mi.}$

Distance from North Fork Rocky Run to South Fork

Rocky Run = $.1 \text{ mi}$

Distance from confluence of Rocky Run to Rapidan River = $.4 \text{ mi}$

GNM/by

NOTE: ACCORDING TO RECENT TOPD, UT, ROCKY RUN IS NOW
CALLED RAPIDAN RIVER, UT.

MEMORANDUM

State Water Control Board

2111 North Hamilton Street

P. O. Box 11143

Richmond, VA. 23230

SUBJECT: Madison County - Baptist Youth Camp, Inc.

TO: file

FROM: Gary N. Moore

DATE: November 14, 1973

COPIES:

On November 13, 1973, the writer inspected the site of the subject proposed discharge. The discharge is proposed to be into an unnamed tributary of Rocky Run, 200 feet above its confluence with Rocky Run. Observations were made at the POD, 100 feet below the confluence of the unnamed tributary and Rocky Run, and at Rocky Run at the Route 621 bridge.

Observed Data:

| | <u>POD</u> | <u>100 ft. below confluence of tributary and Rocky Run</u> | <u>Rocky Run at 621 bridge</u> |
|--------------------------------|------------|--|--------------------------------|
| Width (ft.) | 1-2 | 6-10 | 10-15 |
| Depth (in.) | 4-8 | 4- 8 | 6-10 |
| Flow (ft. sec. ⁻¹) | 1 | 1 | 1 |
| Air Temp (°C) | 20 | 20 | 20 |
| Water Temp (°C) | 9 | 9 | 9 |
| D.O. (mg/l) | 10 | 10.2 | 11 |
| Bottom | rocky | silt | rocky, sandy |

No other discharges in the vicinity have been noted.

GNM:by

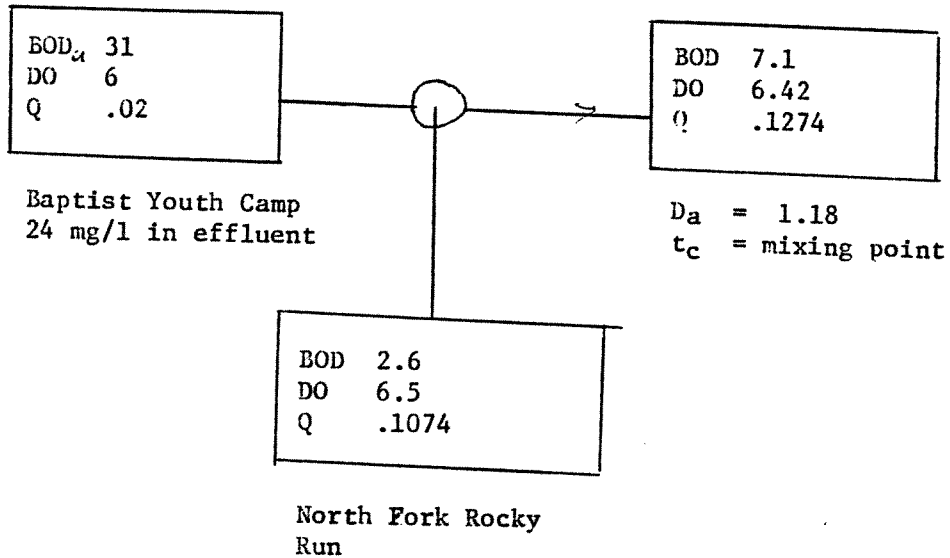
Madison Co. - Baptist Youth Camp - 11/28/73

SAA

$$K_{a30} = 2 * 1.22 = 2.44 \text{ day}^{-1}$$

$$K_{d30} = .2 * 1.48 = .296 \text{ day}^{-1}$$

Effluent: 24 mg/l (4 lbs/day) BOD and SS



Meets non-degradation if effluent is transported to Rocky Run.

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Madison, Virginia.

PUBLIC COMMENT PERIOD: April 7, 2011 to 5:00 p.m. on May 9, 2011

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Rapidan Baptist Camp, PO Box 10, Rochelle, VA 22738 VA0060879

NAME AND ADDRESS OF FACILITY: Rapidan Baptist Camp WWTP, Route 621, 2 miles west of Rochelle, Rochelle, VA 22738

PROJECT DESCRIPTION: The Rapidan Baptist Camp has applied for a reissuance of a permit for the private Rapidan Baptist Camp WWTP. The applicant proposes to release treated sewage wastewaters from residential areas at a rate of 0.02 million gallons per day into a water body. The sludge will be disposed by hauling the sludge to an approved facility (Town of Orange WWTP) for further treatment. The facility proposes to release the treated sewage wastewaters in an unnamed tributary to the Rapidan River in Madison County in the Rappahannock watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, BOD, Total Suspended Solids, Dissolved Oxygen, Ammonia as N, *E. coli*, and Total Residual Chlorine.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requestor, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the documents at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.

Name: Alison Thompson

Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193

Phone: (703) 583-3834 E-mail: Alison.Thompson@deq.virginia.gov Fax: (703) 583-3821

**State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review**

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

| | |
|----------------------|---------------------------|
| Facility Name: | Rapidan Baptist Camp WWTP |
| NPDES Permit Number: | VA0060879 |
| Permit Writer Name: | Alison Thompson |
| Date: | January 24, 2011 |

Major ☐Minor ☒Industrial ☐Municipal ☒**I.A. Draft Permit Package Submittal Includes:**

| | Yes | No | N/A |
|---|-----|----|-----|
| 1. Permit Application? | X | | |
| 2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)? | X | | |
| 3. Copy of Public Notice? | X | | |
| 4. Complete Fact Sheet? | X | | |
| 5. A Priority Pollutant Screening to determine parameters of concern? | X | | |
| 6. A Reasonable Potential analysis showing calculated WQBELs? | X | | |
| 7. Dissolved Oxygen calculations? | X | | |
| 8. Whole Effluent Toxicity Test summary and analysis? | | | X |
| 9. Permit Rating Sheet for new or modified industrial facilities? | | | X |

I.B. Permit/Facility Characteristics

| | Yes | No | N/A |
|--|-----|----|-----|
| 1. Is this a new, or currently unpermitted facility? | | X | |
| 2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit? | X | | |
| 3. Does the fact sheet or permit contain a description of the wastewater treatment process? | X | | |
| 4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit? | | X | |
| 5. Has there been any change in streamflow characteristics since the last permit was developed? | | X | |
| 6. Does the permit allow the discharge of new or increased loadings of any pollutants? | | X | |
| 7. Does the fact sheet or permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses? | X | | |
| 8. Does the facility discharge to a 303(d) listed water? | X | | |
| a. Has a TMDL been developed and approved by EPA for the impaired water? | X | | |
| b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit? | | | X |
| c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water? | X | | |
| 9. Have any limits been removed, or are any limits less stringent, than those in the current permit? | | X | |
| 10. Does the permit authorize discharges of storm water? | | X | |
| | | | |

| I.B. Permit/Facility Characteristics – cont. | Yes | No | N/A |
|---|------------|-----------|------------|
| 11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production? | | X | |
| 12. Are there any production-based, technology-based effluent limits in the permit? | | X | |
| 13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures? | | X | |
| 14. Are any WQBELs based on an interpretation of narrative criteria? | | X | |
| 15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations? | | X | |
| 16. Does the permit contain a compliance schedule for any limit or condition? | | X | |
| 17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)? | | X | |
| 18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated? | X | | |
| 19. Is there any indication that there is significant public interest in the permit action proposed for this facility? | | X | |
| 20. Have previous permit, application, and fact sheet been examined? | X | | |

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs (To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration

| | Yes | No | N/A |
|---|-----|----|-----|
| 1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)? | X | | |
| 2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)? | X | | |

II.B. Effluent Limits – General Elements

| | Yes | No | N/A |
|--|-----|----|-----|
| 1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)? | X | | |
| 2. Does the fact sheet discuss whether “antibacksliding” provisions were met for any limits that are less stringent than those in the previous NPDES permit? | X | | |

II.C. Technology-Based Effluent Limits (POTWs)

| | Yes | No | N/A |
|--|-----|----|-----|
| 1. Does the permit contain numeric limits for <u>ALL</u> of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH? | X | | |
| 2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133? | X | | |
| a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved? | | | X |
| 3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)? | X | | |
| 4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits? | X | | |
| 5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)? | | X | |
| a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations? | | | X |

II.D. Water Quality-Based Effluent Limits

| | Yes | No | N/A |
|---|-----|----|-----|
| 1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality? | X | | |
| 2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL? | X | | |
| 3. Does the fact sheet provide effluent characteristics for each outfall? | X | | |
| 4. Does the fact sheet document that a “reasonable potential” evaluation was performed? | X | | |
| a. If yes, does the fact sheet indicate that the “reasonable potential” evaluation was performed in accordance with the State’s approved procedures? | X | | |
| b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone? | X | | |
| c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have “reasonable potential”? | X | | |
| d. Does the fact sheet indicate that the “reasonable potential” and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)? | X | | |
| e. Does the permit contain numeric effluent limits for all pollutants for which “reasonable potential” was determined? | X | | |

| II.D. Water Quality-Based Effluent Limits – cont. | Yes | No | N/A |
|--|------------|-----------|------------|
| 5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet? | X | | |
| 6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established? | X | | |
| 7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)? | X | | |
| 8. Does the record indicate that an “antidegradation” review was performed in accordance with the State’s approved antidegradation policy? | X | | |

| II.E. Monitoring and Reporting Requirements | Yes | No | N/A |
|--|------------|-----------|------------|
| 1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations? | X | | |
| a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver? | | | X |
| 2. Does the permit identify the physical location where monitoring is to be performed for each outfall? | X | | |
| 3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements? | | X | |
| 4. Does the permit require testing for Whole Effluent Toxicity? | | X | |

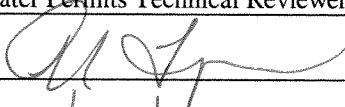
| II.F. Special Conditions | Yes | No | N/A |
|---|------------|-----------|------------|
| 1. Does the permit include appropriate biosolids use/disposal requirements? | X | | |
| 2. Does the permit include appropriate storm water program requirements? | X | | |

| II.F. Special Conditions – cont. | Yes | No | N/A |
|---|------------|-----------|------------|
| 3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements? | | | X |
| 4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations? | X | | |
| 5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]? | | X | |
| 6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)? | | X | |
| a. Does the permit require implementation of the “Nine Minimum Controls”? | | | X |
| b. Does the permit require development and implementation of a “Long Term Control Plan”? | | | X |
| c. Does the permit require monitoring and reporting for CSO events? | | | X |
| 7. Does the permit include appropriate Pretreatment Program requirements? | | | X |

| II.G. Standard Conditions | | | Yes | No | N/A |
|---|-----------------------------|---------------------------|-----|----|-----|
| 1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions? | | | X | | |
| List of Standard Conditions – 40 CFR 122.41 | | | | | |
| Duty to comply | Property rights | Reporting Requirements | | | |
| Duty to reapply | Duty to provide information | Planned change | | | |
| Need to halt or reduce activity | Inspections and entry | Anticipated noncompliance | | | |
| not a defense | Monitoring and records | Transfers | | | |
| Duty to mitigate | Signatory requirement | Monitoring reports | | | |
| Proper O & M | Bypass | Compliance schedules | | | |
| Permit actions | Upset | 24-Hour reporting | | | |
| | | Other non-compliance | | | |
| 2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]? | | | X | | |

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

| | |
|-----------|---|
| Name | <u>Alison Thompson</u> |
| Title | <u>Water Permits Technical Reviewer</u> |
| Signature | <u></u> |
| Date | <u>1/24/19</u> |